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## SOVIET ARMORED DOCTRINE

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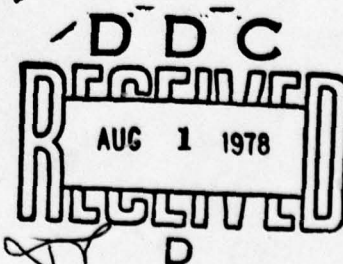
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of the Soviet soldier as well as conscription and recruitment of personnel; it looks in depth at schools and at the training policy of tank organizations and its strengths and weaknesses. It finally discusses the inter-relation of all of these areas with one another as well as possible future trends which may evolve based on the historical evolution and current employment of Soviet armored doctrine.

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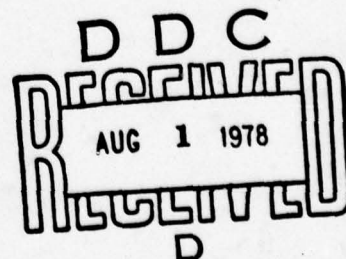
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SOVIET ARMORED DOCTRINE

by

Captain John K. Boles III, USA

B.A. University of Miami, 1970

submitted in partial satisfaction of the  
requirements for the degree of

MASTER OF ARTS

in

INTERNATIONAL STUDIES

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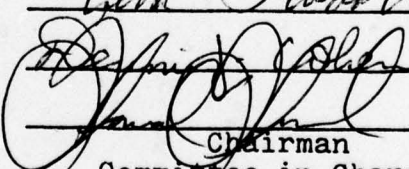
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## INTRODUCTION

The purpose of this thesis is to examine the doctrine and capabilities of the Soviet tank forces. Much is commonly known about the vast numbers of Soviet armored vehicles which face the West, but little is known about the reasons and evolutionary process behind their armored doctrine. It is an awareness of precisely these reasons which I feel is necessary for a full understanding of the objectives of the Soviets in relation to their use of armor.

I have long been curious as to whether or not the armored capabilities of the Soviets, e.g. vehicles, organization, training, and the like were the most adequate for their tactical doctrine. I have read very few composite sources delving with this question--most works address only one facet or another, e.g. vehicles or training, but very few look at the overall picture, specifically with the concept of the tank forces in mind.

My intentions in regard to this paper are to present an in depth discussion of Soviet armored doctrine by looking at not only the evolution and current usage of their tactical doctrine, but by also presenting a look at the personnel, training, organization, and equipment of the tank forces. by doing this I hope to portray the entire scope of their armored doctrine so one sees not only the overall picture but also



the reasoning and logic behind its evolution and functions.

Through my discussion I also hope to answer the question as to whether or not the doctrine and capabilities inherent to the Soviet tank forces, particularly the organization and vehicles, are the best that the Soviets can muster, or can they perhaps do better in some other way? I will attempt to answer this question in the following manner.

The first chapter will center on the historical origins of Soviet armored doctrine and armored vehicles in order to give one the required background for an understanding of today's armored doctrine. In the second chapter I will discuss the recent evolution and implementation of modern armored doctrine and the offensive role that Soviet armored forces will play in a future war. Chapter three will examine the forces with which this doctrine will be carried out by looking at the various unit organizational structures and at the armored vehicles currently employed. Additionally, the important interaction between the doctrine, organization, and equipment will be explored. The fourth chapter will discuss personnel and conscription policies, officer recruitment, and strengths and weaknesses of the Soviet soldier. It will also look at the training concepts utilized for their pre-military, post induction, and tank unit training.

Logically, I can only hope to present the information in such a manner so that the reader can judge for himself whether or not Soviet armored doctrine is a viable concept, however I believe if I am successful in this endeavor, then the paper will have fulfilled its purpose.



## CHAPTER I

### EVOLUTION OF SOVIET ARMORED DOCTRINE

UNTIL 1945

The origin of current Soviet armored forces can be traced back to the ancient nomadic horsemen of the Russian Steppes or perhaps more realistically to the legendary Cossacks of more recent times. As in our own army the horse cavalry was the forerunner of today's Soviet armored forces and it was from the cavalry that much of the tradition, tactics, and esprit de corps was inherited. Today, in the opinion of Marshal Babadzhanian, recently deceased Chief of the Tank Forces,<sup>1</sup> the tank forces of the Soviet Union are the best of all the branches of the Soviet Ground Forces and constitute their real striking force.<sup>2</sup>

The purpose of this chapter is to examine both the evolution of Soviet armored doctrine as well as armored fighting vehicle (AFV) production from roughly 1915 until 1945. My discussion will be divided generally into three sections. The first will deal with armored doctrine from its conception until 1936 and the second section will be concerned with Soviet armored vehicle evolution from 1915 until the mid-1930's. The third section will examine the changes in the status of Soviet armor during the period immediately preceding World

War II, as well as the actual wartime implementation of Soviet armored doctrine, AFV production, and wartime unit organization.

### Early Armored Doctrine (1915-1936)

There were no Soviet tank formations before the late twenties and early thirties and it was during the thirties that Soviet Russia began to devote serious attention to the establishment of its armored doctrine. The tank was originally treated merely as a new weapon to be used in support of infantry operations, with very little thought given to its own individual capabilities or to the possibilities that such a weapon system could provide. The ultimate direction of the Soviet military system, however, was established as a result of the close contact between the Soviet regime and the German army. The Soviet High Command was committed to molding their fledgling army around offensive doctrine and Soviet visitors to Germany in the 1920s were impressed by German theories regarding the incorporation of the tank and the airplane into military operations.<sup>3</sup> Marshal Tukhachevsky, Deputy War Commissar at the time, wanted the Red Army to follow the German initiative by mechanizing the cavalry divisions of the Russian army. As a result of his operations in the Civil War, Tukhachevsky had come to the conclusion that it was impossible, except perhaps in rare cases, to break the enemy forces in a single assault. It was essential that operations follow one upon the other, attack follow attack, in order to inflict continual losses upon the enemy.<sup>4</sup> Armored warfare was the

answer to his problem.

The first serious Soviet work on tanks and their use in war was written in late 1928. K. B. Kalinkovskii carried out some of the first studies on the role of the tank including consideration of tanks as infantry support, high speed tanks in the meeting engagement, in defense, and the problems of anti-tank defense.<sup>5</sup> Concentration in this area coincided with the intensification of work in the joint Soviet-German training centers, primarily at the Kazan Tank School under the auspices of the Motorization and Mechanization Directorate of the Red Army.<sup>6</sup> The Soviets were also aware of the new forms of armored doctrine advocated by the arguments of General J. F. C. Fuller and Captain Liddell-Hart in Great Britain, however they felt that continuous maneuver would be impossible to maintain with the small forces advocated by Fuller. The Soviets came to the conclusion that only mass armies, as advocated by Tukhachevsky, could make use of transportation and motorization.<sup>7</sup> It was additionally at this time that the concept of strong massive reserves was created, a principle which was applied with equal fervor to the new tank formations which were coming into existence and which was necessary in view of the mass army doctrine adopted.<sup>8</sup>

The maneuvers of 1931 through 1933 were crucial to the development of Soviet armored doctrine. Russia initially followed the familiar pattern of thought of other armor oriented countries. One school advocated that the only duty of the tank was one of close support of the infantry. The other believed that the tank was ideally suited to take over the



strategic role of the cavalry in far-flung, widespread operations deep in enemy territory, independent of other arms.<sup>9</sup>

In these maneuvers, however, the Soviets rejected the idea of total dependence on the tank and concentrated on combined arms, basically incorporating both schools of thought. In practice they set up two armies, a "shock" army comprised of mechanized units with artillery and the newly formed tactical air support to carry out quasi-independent operations and breakthrough operations, and an infantry army of the older style to consolidate gains acquired.<sup>10</sup> The tank, used in cooperation with other arms, was accorded a high place as a fundamental means in the offensive, and the heart of these offensive operations was to be the mobile armored corps.

Parachute troops were introduced to disrupt reserves and to harass the enemy's rear, and high speed tank units, employing the BT tank, were formed to make deep semi-independent penetrations. All of these concepts were the forerunner of today's multieschelon offensive doctrine and can be related directly to Marshal Tukhachevsky's nonstop offensive concept.<sup>11</sup>

Initially in May 1930, Mechanized Brigades consisting of three battalions of tanks (thirty-two tanks each) with a small mechanized infantry unit and the necessary services were formed to handle the strategic cavalry role of the semi-independent armored operations as employed by the shock army. These brigades were small by Western standards with about one-hundred tanks apiece, and were at first outfitted with the T-26 tank. (This vehicle and all others mentioned are found in Appendix B). The BT tank, a faster, longer range vehicle was later adopted



in 1932 as standard equipment for these mechanized brigades. Also in 1932 these brigades were further organized into Mechanized Corps, each consisting of two mechanized brigades, a motorized infantry brigade, plus an independent anti-aircraft battalion (artillery).<sup>12</sup> The Russo-Finnish War of 1940 was fought by the Soviets utilizing this organizational scheme of the mechanized corps.

Close infantry support was provided by the inclusion of one battalion of thirty-two light tanks (T-26) in each infantry division.<sup>13</sup> Over and above these integral units a number of "independent" tank brigades were formed, each consisting of three battalions of light or heavy tanks.<sup>14</sup> These tank brigades were attached as required to various infantry units in order to augment the strength of the latter for a particular operation. Armored operations of this nature were tied very closely to the infantry, who were trained to ride into action on the tanks, a practice which has persisted for quite a long time.

By the summer of 1935 the Soviets were well on their way to motorizing their armies. One-third of the corps artillery, one-half of their anti-aircraft artillery, the heavy artillery of the main reserve, three rifle divisions and seven frontier defense divisions had been motorized. Reconnaissance and engineer units had been partially motorized and the signal troops were in the process.<sup>15</sup>

On 30 December 1936 under the auspices of Marshal Tukhachevsky the new Provisional Field Service Regulations were issued. The general principle was that offensive action was

the only way that complete destruction of the enemy could be accomplished. The method was to use combined arms acting along the axis of the main attack in complete depth, led by tanks providing mobility and by artillery providing firepower. In the offensive the tanks and artillery combined would smash open a path for the infantry.<sup>16</sup> While emphasizing the importance of surprise, speed, and mobility, the Soviet offensive was not considered as a "lightning blow", but as a series of blows, each adding to the power of the offensive. The key to the doctrine was the effectiveness of deep penetrating tank columns as well as the massive preponderance of troops and machines which would have the crushing effect of a steam-roller. The distinctive Soviet features of the 1936 Field Service Regulations were the flank attack and disruption of the enemy's rear, depth of both offensive and defensive operations, relative subordination of infantry tactics to that of the mobility and speed of mechanized operations, and wave after wave of assaults rather than the single assault of the Blitzkrieg.<sup>17</sup> As it turned out it was with this well thought out yet untried doctrine that Soviet Russia went to war in 1941 with Germany, and it was this doctrine that generally persisted throughout the war.

#### Early Armored Vehicle Development and Production (1915-1936)

Turning now to armored production, Soviet importance in the field of armored fighting vehicles was not achieved by pure chance. On the contrary, in common with the Western

Powers, she had been very actively engaged in research concerning AFV's since the earliest days of the fighting vehicle, albeit that nearly all the early Russian production models were direct copies of, or based upon, foreign prototypes.<sup>18</sup>

In most Western literature the first Soviet tank is usually stated to be the MS-I, also known as the T-18, produced by the Soviets in 1927, and was a more up to date version of the popular French Renault FT infantry accompanying tank.<sup>19</sup> While it is true that this was the first tank to see series production, it was not the first AFV to be built on Soviet soil.

Claimed by the Soviets as the world's first tank, a curious little one-man vehicle called "Vezdekhod" ("Go Anywhere") was designed by A. A. Porochovshchikov, and an unarmed experimental prototype was built and tested at Riga in May 1915.<sup>20</sup> The armament was to have been a machine gun in a traversing turret. Its unique feature was the use of a single full-width track--virtually a jointed steel belt--with a pair of steerable wheels amidships. On hard ground the vehicle was supposed to ride on these wheels and on the rear portion of the track. On encountering soft ground the small wheels would sink in, thus allowing the full length of the track to contact the ground and provide additional traction. According to Soviet records it achieved a remarkable speed of some 40 km/hr and successfully negotiated trenches and obstacles.<sup>21</sup> The necessary Tsarist government backing was not given for its development, however, and "Vezdekhod" never



went into production and vanished from the scene before the Great October Revolution in 1917. If the basic facts and dates above are true there may be some foundation of truth in the Soviets' claim since the first acknowledged tank of the West, the British "Little Willie" didn't appear until December 1915.<sup>22</sup>

The real foundation of Soviet armored production dates from 1919. It was in that year that the Soviet forces captured from the White Armies two of the French Renault FT light tanks which had proved so successful in the latter years of the First World War. These were thoroughly evaluated and, following a Directive from Lenin in late 1919,<sup>23</sup> a number of "improved" copies were built. By August 1920 the workers of the Krasnoye Sormov plant at Nizhe Novgorod had made the first Soviet tank and gave it the name "Comrade Lenin--Fighter for Freedom".<sup>24</sup> Between 1920 and 1922 fourteen more similar tanks were built.

These two-man "Russian Renaults", as they were called, weighed 7 tons and had a maximum speed of 8.5 km/hr. Armor thickness varied between 8-16mm, the power train was a four cylinder 34hp gasoline engine and armament was comprised of one 37mm gun and one 7.6mm machine gun.<sup>25</sup> This first indigenous production model tank was a direct copy of the Renault prototype and thus was not original in design or characteristics. While technically these fifteen vehicles were of a crude nature, they did however form the nucleus of the USSR's vast armored forces of later years.

During the initial period of turmoil following the



October Revolution, the Civil War, and World War I, the Soviet Union possessed neither the capacity nor the initiative to fully develop its own tank industry. The entire country's energies and resources were geared toward the rehabilitation of civil industry, engineering and agriculture. Some limited AFV production was evident as early as 1927, however before any really large scale tank production could be contemplated, a suitable industrial base had to be established. It was not until 1924 that the first trucks were built on Soviet soil and four more years had to pass before the basic industries--coal, iron and transport--recovered their pre-1914 production levels.<sup>26</sup> But with the beginning of the first Five Year Plan in 1928 industrialization was pushed forward with all the ruthlessness of the Soviet regime and at the conclusion of the first plan in 1932 the elements of heavy industries necessary for the mass production of armaments were created.

It was no doubt the result of such circumstances that dictated the policy of tank technology for the next decade--that of imitation. Though output was being developed to a remarkable degree by virtue of the Five Year Plans, Soviet designers and their leaders were content to let the Western Powers--chiefly Britain--carry out the development of new types of tanks. The Soviets would then copy them wholesale. One should realize, however, that in the Soviets' eyes this was the best that could be done. They were quick to appreciate the potentials of armored warfare and having chosen that their forces must be equipped with adequate armored vehicles

as quickly as possible, they resolved to concentrate on mass production of "borrowed" designs rather than expend the time and effort on their own armored development. It was not until 1939 that the USSR independently developed its own design and produced the famous T-34.

As mentioned earlier, the first tank to go into series production was the light tank MS-I which appeared in 1927. Between 1927 and 1929 about three hundred of these vehicles were built, each being virtually a scaled down variant of the "Russian Renault", having the same armament and crew but weighing only 515 tons and capable of a speed of 22 km/hr.<sup>27</sup> The designation letters "MS" were derived from the Russian "Maly Soprovozhdenie" or "Small Escort"<sup>28</sup> which indicated its main task of supporting the infantry. The concept of mobile, independent armored forces had not yet evolved, and the tank in Russia, as elsewhere, was still regarded principally as an adjunct to infantry formations.

As can be seen, the first decade of Soviet armor saw the production of no more than 320 tanks, all based on the original Renault FT. The decade of the 1930's, however, would prove to be one of vast and impressive expansion of Soviet armored forces both technically and doctrinally, albeit the policy of imitation was still paramount. The thirties saw the evolution of the tank as a fighting vehicle in its own right, the partial decrease of the horse cavalry, and the rise to supremacy of armored formations among all the great powers. As will be seen, during this decade the tank production of Soviet Russia came to exceed that of all the

rest of the world put together, directly due to their massive push towards industrialization. Their concept of mass production of armored vehicles was created at this time and has remained so ever since.

Although the policy of imitation was the critical factor of series production tanks, it must be mentioned that some attempts were made at original Soviet tank design beginning in 1930, but not very successfully. The first original Soviet designed tank was the T-24 introduced in 1930. It was quite a departure from the MS-I generally due to its size and armament. Weighing 18.5 tons it was powered by a 300hp engine, manned by a crew of five, and could achieve a speed of 22 km/hr. Its chief characteristic was its multiplicity of armament consisting of one 45mm gun and four 7.6mm machine guns, one mounted coaxially, two in the turret sides and the fourth in the commander's cupola.<sup>29</sup> Because of its size and other complications, however, it was not successful and only fifteen were built. It is of interest to note, however, that the chief designers included A. A. Morozov, N. A. Kucherenko, and M. I. Tarschinov, a team of designers that would achieve fame in later years with their creation of the T-34.<sup>30</sup>

With this initial try at their own armor design a failure, the Soviets once again turned their attention to foreign prototypes. One of the most successful and long-lived of these was the T-26.<sup>31</sup>

According to many historians the British form of Vickers-Armstrong was the undisputed leader in tank design in the



1920's. While they were successful with many of their designs such as the Carden-Lloyd Mark VI, a light turretless tankette designed for the British Army and copied by many countries including the Soviet Union as the T-27 tankette,<sup>32</sup> other designs were not suitable for one reason or the other. Among these the Vickers 6 ton light tank was rejected by the British Army, but it was still highly thought of elsewhere. Among others, it influenced the development of our own American light tank series which led to the M3 and M5 Stuarts. In the Soviet Union it was adopted as the prototype of the T-26 tank series. Sixteen tanks were purchased from Vickers<sup>33</sup> and soon Soviet factories were turning out copies and variants of these in large numbers. Two versions of the vehicle were initially constructed: the earlier T-26A which had two machine gun turrets, each with one machine gun, and the somewhat later T-26B and C with a single turret and coaxial 45mm gun and machine gun.<sup>34</sup> By the mid-thirties the early T-26A was logically superseded by the more sensible single turreted T-26B and C which became the most common Soviet tanks of the decade preceding World War II. As a matter of interest it was the T-26 that saw the first appearance of the Russian wireless aerial--a horizontal tube running around the top of the turret and affording a hand hold for men riding on the outside of the tank, a common practice in the Soviet army at the time.<sup>35</sup>

This vehicle became the standard equipment for the divisional tank battalions of the Soviet infantry divisions and of the light tank brigades which provided infantry support

at corps and army levels. Along with the BT tank it was the T-26 which saw action in the hands of the Republican troops in the Spanish Civil War where they quite adequately demonstrated their superiority in fire power and maneuverability over the popular breed of lighter, machine gun armed tanks of the period. The T-26 was still in service in large numbers with the Red Army when Germany invaded Russia in 1941.<sup>36</sup>

Second only in numerical importance to the T-26 but more significant in other respects was the Soviet BT tank series. The designation "BT" is derived from "Bystrokhodnii Tank" and means "Fast Moving Tank", which it in fact was. The series was based on our American Christie tank, the T.3 which was developed in 1931,<sup>37</sup> and introduced the revolutionary concept of a high speed tank being able to run on either tracks or wheels. The T.3 was capable of speeds of 70 mph on wheels and 42 mph on tracks<sup>38</sup> yet because of its novel concept was not adopted for U. S. series production. The Soviets purchased two prototypes in 1932 and the BT series became one of the most successful prewar fighting vehicles produced in the USSR. It specifically laid the foundation for the even more successful T-34, from which in turn evolved the current T-55 and the T-62 series.

Christie vehicles had several noteworthy, and for their time, very advanced features such as independent suspension with large bogie wheels, the aforementioned ability of wheel or track movement, and a very high power to weight ratio, all of which contributed to a high degree of tactical and strategic mobility. The Soviets utilized these features to great

advantage, as well as their own modifications and from 1932 until 1939 the BT tanks ran through seven production models,<sup>39</sup> the primary changes being in the armament. The initial BT-2 had a crew of three men, weighed 10.2 tons, was powered by a 400hp engine, and had a 37mm gun and a 7.6mm machine gun. Armament and armor were steadily increased through the various models, with a 45mm gun introduced on the BT-5 and the final version of the BT-7 weighed 13.8 tons, had a 500hp engine and was armed with a 76.2mm gun and one to three 7.6mm machine guns, depending on the configuration.<sup>40</sup> In 1938 the guns on the BT tanks were stabilized, but there is no information as to the performance of this equipment.<sup>41</sup> Lacking the highly developed hydraulic or electronic techniques which were only perfected after the war, it is unlikely to have been much more efficient than the stabilization systems on our own M-4 Sherman tanks of four years later.

The BT series was adopted as standard equipment for the mechanized brigades, primarily for their speed and long range capability, and remained in service up to 1942. A number of BT's saw service in the Spanish Civil War in the late thirties, but here they were primarily used in close support of infantry, a task for which they were not suited, and their capabilities were never fully exploited.

Although the T-26 and the BT tank formed the bulk of the available armor at first, production facilities were vigorously expanded in the early thirties and several other types of tanks soon appeared, including the required mediums and heavies.



The most awesome of the early heavy tanks was the T-35 which first appeared in 1932. Like all other Soviet tanks of the period, the design was not original, but was an almost exact replica of the British "Independent" built by Vickers-Armstrong in 1926.<sup>42</sup> Because of the extreme cost the British abandoned the design, but the Soviets, to whom cost was of little significance, produced about 1,500 of the vehicles and until 1940 it was regarded as the main heavy support tank.<sup>43</sup> Weighing 45 tons and carrying a crew of ten men this large tank carried a variety of weapons mounted in five turrets on two levels. A 76.2mm howitzer and a machine gun were in the main central turret which was tall and cylindrical in shape. Below and to the front were two auxiliary turrets, one with a 45mm gun and the other with a machine gun. The remaining two turrets were similarly armed and were mounted to the rear.<sup>44</sup> The vehicle was very cumbersome and inadequately armored, however, as was proven in the Russo-Finnish war in 1940, and the T-35 was soon thereafter replaced by the KV series heavy tank.

Another heavy tank of the thirties was the T-28 which was also produced in 1932. Like the T-35 the T-28 also had auxiliary turrets, but only two, each mounting a machine gun and situated forward of and to either side of the main turret which carried a 76.2mm gun and a coaxial machine gun.<sup>45</sup> With a crew of six the T-28 formed the remaining bulk of the heavy tank brigades of the thirties and it too saw its first and last action in the Finnish campaign.

The original idea behind the multiplicity of turrets of these two vehicles was that these tanks would operate on

their own and should, therefore, be able to engage targets on all sides. As it turned out, however, both the T-35 and T-28 were deployed in the heavy tank brigades, as mentioned earlier, which fought in support of the main effort of the supported infantry formations, and thus did not achieve their intended purpose of design, that of independent operation.

Apart from their size and the fact that the Soviet army produced vast numbers of them in peacetime, the main point to note about the T-35 and T-28 was their armament. The principle armament of the British A.1 and A.6, both of which were the prototypes of the T-35 and T-28 respectively, was only a 47mm gun. That of the Soviet tanks was a 76.2mm gun and the T-35 had two additional 45mm guns as well.<sup>46</sup> The trend showed that the Soviets were not neglecting the armament of their tanks and it became almost a matter of policy to up-gun their vehicles over like vehicles of other countries. This concept which began in the thirties is still present today, and will be discussed in detail in a later chapter.

During the immediate prewar years the Soviets produced vast quantities of armored vehicles and simultaneously began to develop their own designs in earnest. They up-gunned their machines continuously, relying more on increased projectile weight for penetrative effect against hostile tanks rather than on increased muzzle velocity, forfeiting a degree of accuracy in the process.<sup>47</sup> Their AFV's were constructed well enough to carry out the task they were required to perform, but there were no frills--interiors were cramped, crew comfort received little attention, and the minimum number of

changes in a series were introduced. Having picked the best design initially, such as in the T-26 and BT tank, they could afford to leave the design alone for some time and concentrate instead on quantity production, numbers becoming almost an obsession.

Armored Doctrine and Vehicular Production  
in World War II (1936-1945)

By the late 1930's, the USSR had built up the most powerful armored force in the world with an estimation of her tank forces then at about 24,000--more than four times that of Germany and more than all the other tank forces of the world put together.<sup>48</sup> Had she also possessed such tactical skill in handling this weapon system as was shown by the German Panzer leaders, the course of the war might well have been different. This skill, however, was severely lacking and its absence may be attributed to several factors.

First, the Soviet obsession with mass production had its negative side also, especially on its effect on new tank designs. Because of the system in effect, the production of older model vehicles was continued longer than was really justified and the introduction of new designs was severely delayed. As a result the bulk of the vast Soviet tank forces were obsolete and inferior to the German vehicles when the Germans attacked in 1941.<sup>49</sup> Additionally, just when Soviet armored doctrine was beginning to take shape both physically and theoretically, several other setbacks occurred which were to prove to be of tragic consequence.

The first of these was that when Stalin's purges



finally hit the military in June 1937, the execution of some 30,000 senior officers also included Marshal Tukhachevsky.<sup>50</sup> With Tukhachevsky's execution, the USSR was deprived of the one man who might well have proven to be a Russian Guderian. In the same vein, control of the armored forces was left in the hands of politically reliable men, the majority of which had little knowledge of ability to handle armor.

Another factor was that in the late thirties when the Spanish Civil War began, the Soviets sent both troops and vehicles to aid the Republican forces. General Pavlov, Stalin's reigning Russian tank expert, went to Spain to observe armored operations and through his biased observations incorrectly decided that tanks could not play an independent operational role on the battle field. He persuaded Stalin that tanks were no more than servants to the infantry. As a result on 21 November 1939<sup>51</sup> the seven existing mechanized corps, each with five hundred tanks, were disbanded and their vehicles were distributed to rifle divisions as support weapons, despite the protest of such armor advocates such as Marshal Shaposhnikov, Chief of the General Staff, and General Zhukov, a popular cavalry commander.<sup>52</sup>

It was during this series of events that the Germans invaded Poland in late 1939 and the outstanding successes of independent German tank formations in Poland and France from 1939 to 1940 forced the Soviet High Command to quickly revert back to their earlier doctrine of 1936 and to try to recreate some semblance of the earlier tank corps and divisions to combat the Panzers.<sup>53</sup> The German invasion in 1941 caught the

Soviet army in this stage of hasty reorganization and overtaken by events the uncompleted, untrained formations were thrown into battle. During the first months of the war the hastily created new formations perished, as did the greater part of the separate tank battalions attached to infantry division. It has been estimated that Russia lost three-quarters of the 24,000 tanks that were available in the first six months of the campaign,<sup>54</sup> as well as the troops that manned them.

Keeping in mind the preponderance of older tanks at the outbreak of the war, it must be noted, however, that new tanks were already beginning to come into service in quantity. Several models of light tanks were developed in the late thirties to include the T-40, T-50, T-60, T-70, and the T-80.<sup>55</sup> Basically they were variants of each other, some amphibious, all based on the BT Christie tank series, weighing between six and thirteen tons and armed usually with no more than a 45mm gun.<sup>56</sup> The light tanks were not really produced in any great quantity, however, and the T-80 which appeared in 1942 was the last Soviet light tank. Although employed during the war until the supply was depleted, the Soviets had quite logically realized by then that there was no place in the modern battlefield for a tank that was smaller and undergunned in comparison to its enemies.

More importantly, an experimental series of tanks was begun in 1937 which included the T-46, A-20, A-30 and the T-32, which were also developed from the BT series. It was with these vehicles that the decision was made to forego the

wheel option of the Christie suspension and the direct descendant of these vehicles was the T-34, introduced in June 1940, the most important and well known Soviet tank of World War II.<sup>57</sup> It was a medium tank of about 30 tons using full Christie suspension and was armed initially with a stabilized 76.2mm gun and two 7.62mm machine guns. Carrying a crew of four it was well armored and devoid of any frills, utilizing the new technique of increasing the effectiveness of the armor by sloping the plates, thus decreasing the penetration potential of a projectile. The turret sides were also sloped to give the tank a pyramidal aspect from all angles.<sup>58</sup> The Soviets had about one thousand T-34/76 tanks, which had a 76mm gun, at the time of the German invasion and they proved superior to the contemporary Panzerkampfwagen III and IV,<sup>59</sup> which at the time carried only a 37mm or 50mm gun. Throughout the war the T-34 was constantly improved by the addition of more armor and better armament and at the end of the war the final version, the T-34/85, incorporating an 85mm gun, was one of the most reliable tanks in the world.<sup>60</sup>

Dictated perhaps by the frantic efforts in 1939-1940 to reorganize the armored forces, the Soviets in 1940 adopted a "two-tank" policy having a fast medium vehicle backed up by a heavy tank with greater armor protection. As it turned out, this policy also greatly facilitated the mass production required to cover the tremendous losses which were inflicted during the war. As we have seen, the T-34 was selected as the medium tank and the KV ("Klementi Voroshilov") became the standard heavy tank until superseded by an improved



model in 1943.<sup>61</sup>

The KV began series production in 1940 and was manned by a crew of five, weighed 43 tons and was initially armed with a 76.2mm gun and three machine guns. Unlike the Christie suspension of the T-34, the KV used torsion bar suspension, claimed by the Soviets as their own invention, however actually developed by the Germans in 1938.<sup>62</sup> The KV was also continually improved to keep pace with the newer more powerful German tanks such as the Panther and Tiger. These improvements culminated in 1943 with the KV-85 which had an improved turret and an 85mm gun, the same turret and gun as found on the T-34/85.<sup>63</sup>

In addition to the turretted models, the KV and T-34 chassis were also used for a whole series of turretless vehicles which the Soviets introduced under the designation of S. U. or "Samokhodnaya Ustanovka", a self propelled gun.<sup>64</sup> These were modeled from the German "Sturmgeschütz" and variations and improvements of these assault guns have remained in the Soviet inventory through to the present.

It was also in these two series that the Soviet diesel tank engine was introduced. It was a V-12 unit developing 500hp in the T-34 and 600hp in the KV series. An efficient, rugged and reliable pack, it served the Soviets well in the war and amazingly enough in an updated form the same engine still serves to power the current T-55 and T-62.<sup>65</sup>

Armored tactical doctrine, as put forth in 1936 and reevaluated in 1940 remained substantially the same through the war with changes primarily taking place in the organizational structure of the units. The creation of large

operational tank formations required a great deal of time due to the initial massive loss of tanks. The subsequent push on mass production, in itself a fantastic effort of wartime industrialization, did not make up the deficit until late in 1942 when sufficient reserves allowed the creation of the new Tank and Mechanized Corps.<sup>66</sup> The Soviet Union during the last three years of the war had an annual production rate of 30,000 tanks, assault guns and armored cars<sup>67</sup> with an overall wartime production of over 104,000 armored vehicles.<sup>68</sup>

Following the tremendous tank losses of 1941 the Soviets, out of necessity, reorganized themselves on a massive scale. In early 1942 tank brigades were formed consisting of two tank battalions with a total of fifty-three tanks, a motorized infantry battalion and various service elements, including a mortar company for close fire support.<sup>69</sup> This move added significantly to the Soviet army's capability to exploit breakthrough operations.<sup>70</sup> By 1944, with the industry's tank production now at full capacity, the tank brigades were given an additional tank battalion and by 1945 the Germans had identified over 250 of these formations, each now with about sixty-five tanks apiece.<sup>71</sup> During 1942 these brigades were also further organized into tank and mechanized corps, as previously mentioned, with a tank corps consisting of three tank brigades, one motorized infantry brigade, one or two heavy tank battalions, and various self propelled and towed artillery, reconnaissance and other service support units attached. This gave the tank corps a total of 202 tanks, 42 self propelled guns and 178 towed guns.<sup>72</sup> In the mechanized corps the

proportion of tank and infantry brigades was reversed.

Soviet tank and mechanized corps were in essence the equivalence of the tank (Panzer) and mechanized (Panzer-Grenadier) divisions in the German Army and they were roughly two-thirds as strong as American tank divisions. In view of this it is more logical to equate Soviet tank and mechanized corps with Western divisions and not with corps sized elements.<sup>73</sup>

By the summer of 1944 twenty-five tank and thirteen mechanized corps existed,<sup>74</sup> however due to severe shortages of equipment (elgl repair parts) for the tank forces and the lack of motor vehicles for the infantry, these new tank units were forced to adapt their operations to the slow tempo of the dismounted infantry rather than the fast, independent role initially envisioned for them. Because of this, as mentioned, wartime doctrine was based largely on reconsiderations of prewar theory. It brought back assault shock troops, massed artillery and tanks, and Tukhachevsky's basic theme of the indispensibility of combined arms was played to the fullest.<sup>75</sup>

In addition to the tank brigades found in the tank and mechanized corps, there were a number of independent tank brigades formed of 107 T-34 tanks apiece and no infantry,<sup>76</sup> these brigades being utilized primarily as close support for infantry operations. There were also about 150 heavy tank regiments of thirty-two KV or JS series heavy tanks (the JS series will be discussed in a later chapter) and these were employed by assaulting infantry formations as required.<sup>77</sup> These numerous independent tank brigades and regiments were concentrated into six tank armies used chiefly to support



the infantry mass of the Soviet army which amounted to some 520 rifle divisions.<sup>78</sup> It should be emphasized that by 1944 most tanks in a brigade or regiment were the T-34/85 and KV-85, as well as the new JS series heavy tank, introduced in 1943, which was just beginning to arrive to the field units. Thus the formations were strengthened in both number and quality of tanks towards the end of the war, giving the Soviets an increasing advantage over the rapidly deteriorating forces of the Germans.

This organizational configuration we have briefly discussed was retained until the end of the war when the Soviet armored troops were again reorganized, this time into tank and mechanized divisions. Here the aim, based on experience gained during the war, was to strengthen their capacity for more independent operations.<sup>79</sup> This post war reorganization will be discussed in detail in a later chapter as will be the post war evolution and capabilities of the current series of armored vehicles presently in the Soviet inventory.

During the twenty years from 1925 until 1945 Soviet armor evolved from virtually nothing to become, by the end of World War II, one of the most powerful and advanced armored forces in the world. Albeit her ruthless enforcement of mass production was a critical factor in the achievement of that power, much is to be said for the development and application of Soviet armored doctrine during this period. Many basic tenets were formed which are still in practice today, both in doctrine and in technology, and I believe that an understanding

of early doctrine and development, as we have discussed, is critical to an adequate understanding of the Soviet tank forces of today.

## CHAPTER I FOOTNOTES

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<sup>3</sup>John Erickson, The Soviet High Command (New York: St. Martin's Press, 1962), p. 296.

<sup>4</sup>Ibid.

<sup>5</sup>Ibid., p. 270.

<sup>6</sup>Ibid.

<sup>7</sup>Ibid., p. 318.

<sup>8</sup>Ibid., p. 351.

<sup>9</sup>The Royal Armoured Corps Tank Museum, Bovington Camp, England, Tanks of Other Nations: USSR (Dorset: Dorset Press, 1970), p. 8.

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<sup>11</sup>Ibid., pp. 350-351.

<sup>12</sup>Ibid.

<sup>13</sup>The Royal Armoured Corps Tank Museum, USSR, p. 8.

<sup>14</sup>Ibid., p. 10.

<sup>15</sup>Erickson, Soviet High Command, p. 390.

<sup>16</sup>Ibid., p. 437.

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<sup>18</sup>R. M. Ogorkiewicz, "Soviet Tanks," The Red Army, ed. B. H. Liddel Hart (Gloucester: Harcourt, Brace and World, Inc., 1968), p. 297.

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<sup>24</sup>LTC N. Yelshin, "Academy Chief Relates History and Role of Tankmen," Soviet Military Review, No. 8 (August, 1977), pp. 2-3.

<sup>25</sup>Brereton, Russian Tanks, p. 11.

<sup>26</sup>Ogorkiewicz, "Soviet Tanks," p. 296.

<sup>27</sup>Brereton, Russian Tanks, p. 11.

<sup>28</sup>Ibid., p. 6.

<sup>29</sup>Ogorkiewicz, "Soviet Tanks," p. 297.

<sup>30</sup>Brereton, Russian Tanks, p. 4.

<sup>31</sup>Ibid.

<sup>32</sup>Erickson, Soviet High Command, p. 350.

<sup>33</sup>The Royal Armoured Corps Tank Museum, USSR, p. 17.

<sup>34</sup>Ogorkiewicz, "Soviet Tanks," p. 297.

<sup>35</sup>The Royal Armoured Corps Tank Museum, USSR, p. 18.

<sup>36</sup>Brereton, Russian Tanks, p. 5.

<sup>37</sup>Ogorkiewicz, "Soviet Tanks," p. 298.

<sup>38</sup>Brereton, Russian Tanks, p. 6.

<sup>39</sup>Ibid.

<sup>40</sup>Ibid., p. 20.

<sup>41</sup>The Royal Armoured Corps Tank Museum, USSR, p. 19.

<sup>42</sup>Ogorkiewicz, "Soviet Tanks," p. 299.

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<sup>44</sup>Ibid.

- <sup>45</sup>The Royal Armoured Corps Tank Museum, USSR, p. 21.
- <sup>46</sup>Ogorkiewicz, "Soviet Tanks," p. 301.
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- <sup>51</sup>COL V. Anfilov, "From Cavalry Armies to Tank Divisions," Krasnaya Zvezda, Moscow (22 August, 1967), p. 2.; Trans. JPRS No. 43669, 1967, p. 16.
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- <sup>53</sup>Ibid., pp. 316-317.
- <sup>54</sup>The Royal Armoured Corps Tank Museum, USSR, p. 11.
- <sup>55</sup>Ogorkiewicz, "Soviet Tanks," p. 303.
- <sup>56</sup>The Royal Armoured Corps Tank Museum, USSR, p. 37.
- <sup>57</sup>Brereton, Russian Tanks, p. 6.
- <sup>58</sup>Ogorkiewicz, "Soviet Tanks," p. 302.
- <sup>59</sup>The Royal Armoured Corps Tank Museum, USSR, p. 25.
- <sup>60</sup>Brereton, Russian Tanks, p. 7.
- <sup>61</sup>Ibid.
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<sup>72</sup>COL n. Kobrin, "A Tank Army in the Offensive," Soviet Military Review, No. 1 (January, 1976), p. 47.

<sup>73</sup>Ibid.

<sup>74</sup>Ogorkiewicz, "Soviet Armor," p. 28.

<sup>75</sup>Bayerlein, "Armoured Forces," p. 314.

<sup>76</sup>The Royal Armoured Corps Tank Museum, USSR, p. 10.

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<sup>78</sup>Ogorkiewicz, "Soviet Armor," p. 28.

<sup>79</sup>Bayerlein, "Armoured Forces," p. 319.



## CHAPTER II

### CURRENT SOVIET ARMORED DOCTRINE

The predominant theory of Soviet tactical doctrine is that decisive results are achieved only through offensive action, and the general concepts laid down by Marshal Tukhachevsky in the 1930's and proven valid in World War II still hold true today. Current Soviet tactical doctrine is perhaps best summarized by COL V. YE. Savkin in his 1972 study The Basic Principles of Operational Art and Tactics when he states:

Combat activeness presumes that the basic form of combat operations by our troops will be the attack, since it is of decisive importance in achieving victory over the enemy. Only a decisive attack conducted at high tempos and to a great depth ensures total victory over the enemy. The goal of the attack lies in the total defeat of the defending enemy and capture of vital areas of his territory. The goal is achieved by destruction of means of mass destruction and the enemies main groupings with nuclear weapons, the fire of other means, and also the forceful advance to a great depth of tank and motorized rifle troops interworking with aviation and airborne landings, and the bold move to the flanks and rear of the enemy and destruction of him piecemeal.<sup>1</sup>

The purpose of this chapter is to present a detailed discussion of current Soviet offensive tactical doctrine as it pertains to the Ground Forces and more specifically, the tank forces. It is not my intention to provide a detailed examination of all aspects of Soviet military doctrine but rather to give a brief overview of the historical evolution of doctrine since World War II in order to set a perspective

for the discussion, and to then concentrate on the above mentioned purpose of the chapter. I have divided the chapter into three sections for clarity. The first section will deal with the evolution of Soviet military doctrine from World War II until the present. The second portion will be concerned with the role of the Ground Forces and its tank forces in a contemporary war, and the third section will address possible future doctrinal changes in relation to Soviet armored warfare.

#### Evolution of Armored Doctrine (1945-1978)

Since World War II, in light of shifting economic and political conditions in the Soviet Union, there have been several radical changes in Soviet military doctrine. From the end of the war until the death of Stalin in 1953 Soviet military planners adhered strictly to prescribed World War II doctrine and were concerned primarily with the possibility of fighting a conventional war with the Western Powers, one in which the Central European zone would be the primary theater of operations. Stalin believed that in a future war theater forces would be employed as they had been in World War II. Therefore, for Ground Forces, mass was all-important. This reliance on a vast standing army was a heavy burden on the Soviet Union's developing post war industrial economy. However, because the Soviet Union lacked any significant nuclear weapons capability, the Soviets confined their military goals basically to protecting the western flanks by consolidating control over East European satellite countries in order to

establish a buffer zone between the USSR and Western Europe.

Military doctrine from 1953 until roughly 1958 remained generally conventional, however with the Soviet development of nuclear weapons and the means for their delivery, expounders of Soviet military doctrine sought to integrate this new weapon system into the military structure.<sup>2</sup> As with almost every other facet of innovative Soviet development, however, new trends required a great deal of time to gain acceptance and, holding to traditional principles of war, the Soviets continued to emphasize the capabilities of their massive Ground Forces, which would most likely be employed in Europe. Nuclear weapons were treated more as powerful cousins of conventional armament rather than as a means unto themselves.<sup>3</sup>

During the period from 1958 to the mid-1960's Soviet doctrinal policy underwent a radical change. Under the leadership of Secretary Khrushchev, a staunch advocate of nuclear weapons and missile delivery systems, the Soviets reviewed their military doctrine and concluded that nuclear weapons would be the decisive factor in a future war.<sup>4</sup> It was felt that war would be thermonuclear from the outset and conventional forces would be of minimal importance. Consequently this line of thinking led to the creation of the Strategic Rocket Forces in 1960 and the subordination and reduction in strength of the other four combat services: the Air Force, to some extent the Navy, the National Air Defense Forces, and specifically the Ground Forces.<sup>5</sup> Also during this period the conflict between the technocrats and the professionals began to develop and has remained a thorn in the side of the



Soviet armed forces ever since.<sup>6</sup>

In the mid-1960's following the removal of Khrushchev, doctrine began to swing around to reflect the need for more balanced theater and strategic forces. While the decisive nature of nuclear weapons and their massive employment in a future war were still paramount in doctrinal thinking, it was recognized that a given conflict would not necessarily be thermonuclear at the onset but could be of a conventional nature to begin with, though it was felt that it would soon escalate to a full-fledged nuclear conflict.<sup>7</sup> Additionally, as advocated by Marshal Sokolovsky, the Soviets recognized that with this new concept of war, well-trained, massive armed forces must be available "from the very first days of the war" since "large simultaneous losses from nuclear blows require considerable reserves."<sup>8</sup> In the interests of "seizing the strategic initiative" Sokolovsky urged that peacetime force structure be such that "the main aims of the initial phase of the war could be attained without additional mobilization" of troops.<sup>9</sup>

Thus, beginning in the late 1960's and continuing in the 1970's, the USSR has modernized her conventional forces on an increasing scale and has given them a greater share of the tactical responsibility in future conflicts. No really major doctrinal shift is evident, however, and the basic tenets of Soviet military doctrine are still consistent, albeit on a modified scale, with that of the early 1960's and also the 1930's. That is to say that in a future war nuclear weapons will still be the decisive factor; the de-

element of surprise and the necessity for offensive operations are still paramount, however that now the joint effort of all Soviet forces, including large massive land armies, will also be required. Nuclear weapons are no longer the "ultimate" weapons they were once thought to be, but are rather now only a portion, albeit the decisive portion, of the forces committed in war.

### The Role of Current Armored Doctrine

In keeping with this line of thought it is now perhaps best to set the stage for our discussion concerning current Soviet tactical doctrine, specifically orienting ourselves towards the offensive role of the Ground Forces and subsequently the tank forces. Although I realize that for a complete understanding of tactical doctrine one must be familiar with the organization of the various elements employed and how each effects doctrine, I have chosen instead to devote an in depth discussion of organization for a later chapter. Any organizational information required here will be kept to a minimum. In addition, for clarity I have subdivided this portion of the chapter into the following topic areas: manpower, frontages, rates of advance, eschelons, reserves, movement, maneuver, night operations, river crossing operations, chemical-biological-radiological operations, and replacement of troops.

#### Manpower

Offense is the key word in Soviet tactical doctrine, and is achieved through seizing the initiative and exploiting

the surprise factor, for both conventional and nuclear operations.<sup>10</sup> The primary force behind this offensive doctrine is the Ground Forces which represents the largest component of the Soviet armed forces. While I realize that pure numbers say nothing of the myriad factors that determine the combat capabilities of a particular element, I think a small introduction to the immense size of the Ground Forces is in order.

The Ground Forces have a force structure of three divisional types--tank, motorized rifle, and airborne--in the proportion of 50 tank divisions, 110 motorized rifle divisions, and about 8 airborne divisions.<sup>11</sup> The general level of manpower is approximately 1,825,000 men<sup>12</sup> who are in turn backed by an inventory of 41,500 tanks, 37,500 armored personnel carriers, 17,500 guns and 2,500 helicopters.<sup>13</sup> The profile of the Ground Forces is one of a highly mobile force with powerful armored and mechanized infantry elements and with nuclear and/or chemical weapons organic down to division level. The Soviet command places almost unbounded faith in the armored fighting vehicle, the tank, and the general evolution of the equipment of the Ground Forces has been to increase the strength and capability of the armored strike forces, followed by the introduction of APC's and light fighting vehicles to permit the infantry to keep pace with and to fight with the tank forces.

Soviet armored fighting vehicles (AFV's) have been specifically designed for operations under nuclear conditions and chemical, biological, radiological (CBR) conditions in



general. The Soviet tank has, in particular, a low minimum cross section, radiation attenuation liners, special ventilation systems and sealing units to protect its crew against blast effects. APC's are also fitted out with extensive protection for CBR warfare.<sup>14</sup> Additionally, modern self-propelled artillery has been recently introduced to move with the highly mobile tank and motorized rifle units.<sup>15</sup> Both manpower and materiel thus combine to make the present Soviet Ground Forces the most powerful land army in the world.

Successful Soviet military operations depend on the integrated combat employment of all branches and the basic tactical unit for sustained operation in the Ground Forces is the motorized rifle division, a combined arms unit of mechanized infantry, tanks, and artillery.<sup>16</sup> Tank forces, however, are the fist of Soviet forces, and provide maneuver, direct fire, and momentum to the combat action. It is with the tank forces that the discussion from here on will be oriented.

How do the Soviets plan to employ these massive amounts of forces if they go to war? To answer this question let us look at the Soviet concept of a land battle and then examine the tactical doctrine of the offense.

#### The Land Battle

From an early stage in their evolution the Ground Forces have developed a dual capability--that of preparation and training for both nuclear and conventional warfare. The primary requirement has been to develop a nuclear war fighting

capability and nuclear operations have been a critical factor for all tactical planning. Additionally, as John Erickson indicates, in the Soviet's eyes nuclear and conventional war is no an "either/or" situation but rather a "both/and" relationship.<sup>17</sup> In brief, that nuclear and conventional weapons compliment each other.

The Soviet conduct of a land battle would be based from the outset on offensive action, with a mass nuclear strike delivered by medium range missiles and aircraft in great depth with the aim of destroying enemy ground and air forces. This would be simultaneously accompanied by a high speed advance of strike forces moving by day and at night, with the armor in particular striking as deeply as possible into the enemy's rear areas. Tactical nuclear and chemical fires would additionally augment the power of the strike forces. High speed mobile operations, together with extensive use of airborne forces also fit the nuclear battlefield and airborne and helicopter borne forces would be used to exploit the initial nuclear blow and would be used above all to keep the Soviet advance on the move.<sup>18</sup> In the case of the European theater Soviet doctrine calls for a series of armor thrusts followed by motorized rifle troops to liquidate strong points and seize cities. Their campaign seems to call for a roll-up of NATO defenses with arrival at the channel ports in ten to fourteen days--before NATO's inherently greater strength could be mobilized.<sup>19</sup> That remains to be seen, however, with this brief concept of a Soviet land offensive in mind, let us now look at how they will actually employ their forces

in order to achieve their envisioned goal.

The experiences of World War II have played a large part in the tactics and structure of today's Soviet forces. Utilizing the concept of massive amounts of troops divided into many small, highly mobile units the basic maneuver formations have been created for a blend of frontal attacks and envelopments, with primary reliance on the mobility and shock effect of the powerful armored and mechanized elements. These units are structured to facilitate the concepts of mass and maneuver and each is essentially a combined arms team. The power behind these combined arms teams, however, are the tank forces.

Tank units are considered to be the basic striking force of the Ground Forces. Combining their organic heavy firepower with supporting tactical nuclear strikes, conventional artillery and tactical air strikes, the tank forces are ideally suited for offensive operations. Offense is considered to be the prime combat operation of armor and is continued on an around-the-clock basis in any type of weather and over any kind of terrain in order to maintain the momentum of the advance.

Soviet doctrine holds that nuclear weapons directly and indirectly create the conditions for deep penetrations by tank units. Directly, a nuclear strike can form a breach or separation of enemy units which would allow the Soviet tank force to either achieve an envelopment or a penetration deep into the enemy's defensive positions and rear areas. Indirectly, an enemy force on the defense disperses to offset



the danger of nuclear annihilation. This dispersion creates gaps and separations between units that may then be capitalized upon by tank elements maneuvering into the enemy defenses.<sup>20</sup> Relentless pressure by the Soviets following a breakthrough by either of these means will prevent the enemy from employing nuclear strikes against their attacking forces, by virtue of the close proximity of each side to one another.

### Frontages

The aim of Soviet offensive operations is to rapidly breach enemy defenses in order to launch high speed tank formations into the deep rear. Under nuclear conditions formations are assigned to wide sectors in which they maneuver on narrower attack frontages in order to penetrate enemy defenses and select favorable axes for advance.

The width and depth of the battlefield is determined by several factors based on consideration of the mission, enemy situation, terrain and troops available. Based on observation of Soviet exercises the depth of Front operations could reach up to 500 miles or more.<sup>21</sup> At Army level with an area of operations covering a width of about 80 miles the actual attack frontage is envisioned to be only about 27 to 36 miles in width with the actual objective set at about 40 miles. The total depth of the area of operations would be in the range of 150 miles.<sup>22</sup> The divisional attack frontage would be 9 to 10 miles wide with an immediate objective set at around 20 miles in an area of operations of perhaps 50 miles in depth.<sup>23</sup> In smaller tank units the control figure most

commonly used is a 100m interval between tanks on line. Generally speaking then, a tank company for example, with ten tanks can be deployed with a frontage of about 1000m and a battalion would cover 2 to 3km.<sup>24</sup>

#### Rates of Advance

High speed mobility is the key to Soviet operations. in that it can seriously inhibit enemy reaction and, by keeping close contact with the enemy the Soviets can reduce the possibilities of the enemy employing nuclear weapons to crush an assault. The speed of offensive operations can additionally contribute to preventing any organized retreat on the part of the enemy.

Under nuclear conditions Soviet forces envision themselves as advancing at a rate of some 40 to 60 miles in a twenty-four period; under conventional conditions these figures have been reduced to 25 to 35 miles due to the more organized enemy defenses that would be encountered.<sup>25</sup> Generally in the attack, speed and shock effect (surprise) are preferred over fire and maneuver as a means of developing combat power since the overall objective is rapid advancement.<sup>26</sup> Little emphasis is placed on the concept of having to establish a "base of fire," a basic component of fire and maneuver, which is felt would severely restrict or hinder the rapid movement envisioned.

On a given major axis of perhaps 30 miles in width the Soviets envision eight to ten major breakthrough operations and the pace should quicken once a breakthrough has been

accomplished. Once penetration into the enemy's rear has been effected it is felt that the rate of advance will increase to at least 50 to 60 miles per day.<sup>28</sup> As Sokolovsky states,

. . . that side which manages during the first days of the war to penetrate more deeply into enemy territory naturally acquires the capability for more effectively using the results of its nuclear strikes and disrupting the mobilization of the enemy. This is especially important with respect to European theaters of operation with their relatively small operation depth.<sup>29</sup>

A further elaboration on this comes from Savkin when he states that

In a future war the swift and deep wedging of sub-units, regiments and divisions attacking troops into the enemy's defense will lead to its dismemberment into isolated centers of resistance and to an elimination of the front line in the former sense.<sup>30</sup>

Logically it doesn't appear possible for all the main body to advance at the same high rate of speed in the course of an attack, however heavily armored spearheads will be expected to exploit created or discovered gaps in the enemy defense, effecting deep penetrations to envelop large enemy formations which would be destroyed by following motorized rifle units. The exposed flanks of the penetration would be covered by organic mechanically emplaced minefields<sup>31</sup> as well as through the deployment of the forces into echelon right and left formations, to be discussed shortly. With this concept of the high speed advance of Soviet troops as a basis, let us look now at the actual battlefield configuration of the conventional forces under discussion.



### Eschelons

The "wave after wave" assault concept as advocated by Marshal Tukhachevsky<sup>32</sup> in the thirties has been altered somewhat to become more like the Blitzkrieg tactics of the Germans of World War II. One might say that now the Soviets have combined these two modes of attack in that the overall picture is now one of a rapid, high speed massive assault which in itself is made up of several eschelons, or waves, of troops and weapons. These are not to be confused with the eschelon right (and left) formations to be discussed a bit later.

The Soviets organize all of their combat formations, both in the offense and defense, into eschelons--a unique Soviet tactical doctrine. Normally there are two eschelons employed with a reserve, depending on the situation.<sup>33</sup> In the case where the enemy is weak, the area of operations is extremely wide, or where nuclear allocations are readily available, only one eschelon with all subordinate units on line may be employed. Normally, however, the first eschelon is the main striking force and is heavily supported by artillery, air, and nuclear fire power. This eschelon will usually consist of at least two-thirds of the available attacking force.<sup>34</sup> The second eschelon moves in approach march formation behind the combat formations of the first eschelon at a distance prescribed by the commander, usually no closer than 1km and no further than 3km for a battalion size element.<sup>35</sup> It consists of the remaining third of the force and its mission is to support the action of the first eschelon. The second eschelon may additionally revert to

the role of reserve to exploit the success of the first eschelon or to replace depleted units. Thus, as a unit attacks in eschelons, each eschelon with its own preplanned scheme of maneuver and objective, the defender sees what appears to be a series of attacking waves of troops.

### Reserves

In addition to the utilization of eschelons,, the Soviets normally will also employ a reserve. The reserves are relatively quite small in comparison to our own doctrine, corresponding only to a platoon at battalion level, a company at regiment, a battalion at division, and so on.<sup>36</sup> The distinguishing characteristic between the second eschelon and the reserve, other than size, is that an eschelon has a predesignated mission and objective while the reserve does not. The reserve is considered as the commander's contingency force which he may use as he sees fit to repel counterattacks, to replace destroyed units or to act as an exploitation force to influence the outcome of the operation. In the case of, say, a tank regimental reserve, the tank company forming all or part of the reserve would move in a designated direction and would maintain a specified distance from the attacking forces, usually no more than 3 to 5km.<sup>37</sup> Moving in the approach march configuration they would move directly from the march to wherever they were required.

### Movement

According to A. A. Sidorenko, in his study The Offensive, there are generally two methods of troop movement prior to

an attack--the approach march and the march formations.<sup>38</sup>

Both are column movements and are utilized for high speed approach as well as being ideally suited for rapid deployment into combat formations. The "approach march" formation is basically the same as our own "traveling overwatch" and is used primarily when there is no probable threat of enemy intervention and rapid forward movement is required. The approach march formation consists of columns of forces dispersed laterally and in depth. This ensures: least vulnerability to enemy nuclear weapons, artillery and air strikes; rapid maneuver of troops on the battlefield and their deployment into combat or into march formations; and high rates of advance and rapid crossing of contaminated zones and destruction.<sup>39</sup>

The "march" formation, on the other hand, is the actual deployment of troops into combat formations and usually takes place on a predetermined line of deployment at a designated time.<sup>40</sup> The march formation is also known in some studies as the "pre-battle" formation.<sup>41</sup> As in our own doctrine, the line of deployment will usually be chosen behind folds in the terrain which serve to protect the troops from enemy observation and from enemy fields of fire. It will additionally be as close as possible to the forward edge of the battle area (FEBA) in order to take maximum advantage of the speed of the approach march formation and placing Soviet troops as far forward as possible before being committed to the attack. As an example, the line of deployment for a tank battalion from the approach march into the march



formation will be 2 to 3km from the FEBA. The march formation also consists of dispersed columns, however these columns are now configured in one of the following manners: a line of columns, eschelon right or left, and the wedge formation.<sup>42</sup> Here again, speed is paramount in the configuration of the units; the only difference between approach march and march formations is that now the columns are even more tactically prepared for deployment into combat.

In the actual battle formation the subordinate unit columns are further deployed into combat line formations from the march, usually taking place between 800m to 1000m from the line of contact.<sup>43</sup> The three battalion level battle formations employed are the line, eschelon right and eschelon left. The line battle formation is most often employed during the initial stages of an attack, in meeting engagements, while crossing water obstacles, or in defense. The eschelon formations are utilized when a threat to one of the battalion flanks is anticipated or when a flank is open. Keeping in mind that the "march" formation is, for all intent, the first phase of the combat formations, it is quite understandable why the Soviets emphasize attacking "from the march." The fluid state of a high speed attack is carried to its fullest extent by employing the doctrine of attacking "from the march."

The Soviet offensive will not be launched with equal intensity across a broad front, but rather the available forces would be massed in key sectors, either to exploit gaps left by nuclear strikes or to create their own by conventional firepower. Once the breakthrough or penetration is accomplished

then a relentless pursuit of withdrawing enemy forces is begun. Simultaneously a series of meeting engagements will take place as contact is made with enemy reserves being brought up to reinforce the forward deployed troops or with retreating enemy formations. These three actions--the meeting engagement, the breakthrough, and the pursuit--constitute the three major types of offensive action perceived by the Soviets.<sup>44</sup> (See Appendix A)

#### The Meeting Engagement

The meeting engagement is looked upon as the most common offensive action on the nuclear battlefield where combat zones extend over vast areas and often opposing forces will clash throughout the depth of the zone. Upon contact with an attacking enemy the Soviets will deploy "from the march" and using a standard drill are prepared to make a coordinated attack up to regimental strength within one hour.<sup>45</sup> Due to the fluid nature of the combat action and the resulting confused situation, the Soviets believe that speed of reaction is vital and that the commander who can regain the initiative first will have a decisive advantage over his opponent. As other troops arrive on the scene, they are also committed, so that the meeting engagement builds in both strength and intensity. The goal is to disorganize and divide the enemy, and to then destroy the divided forces. The meeting engagement is terminated when the enemy force is destroyed, is forced into a defensive situation, or withdraws.<sup>46</sup>

### The Breakthrough

When the enemy has established either a hasty or a deliberate defense line, the Soviets place primary emphasis on a penetration or breakthrough operation in order to carry the battle to the enemy's rear rather than seizing and consolidating terrain objectives, as is our practice. As mentioned, normally the operation will employ two echelons of attack forces. The assault will not necessarily be directed to the seizure of key defensive terrain, but will instead utilize the first echelon to push through weakly defended or unoccupied areas to create gaps that will permit the exploitation forces of the second echelon to strike deep into the rear of the enemy. Normally in breakthrough operations, the tank units are maintained in the second echelon so as to fully utilize their mobility and powerful organic firepower during the exploitation phase of the operation.<sup>47</sup> Once the breakthrough is accomplished, subsequent action is the encirclement and destruction of the penetrated enemy defenses characterized by a series of meeting engagements and pursuit.

### The Pursuit

In so far as the ultimate goal of the Soviets is complete destruction of the enemy, the Soviets consider the pursuit as their means to this end. A pursuit operation is not treated as an afterthought to a battle where the victors route the defenders and chase them into the ground. Planning for the pursuit is started before the attack and includes consideration of possible routes for withdrawal, composition



of the actual pursuit forces, determination of schemes of maneuver best suited to the situation, and allocation of chemical and nuclear fire. The pursuit is initiated at the first opportunity by regimental and higher units and the configuration may be as a direct pursuit (frontal), a parallel pursuit, or a combination of the two.<sup>48</sup> A direct pursuit is self explanatory, however the parallel pursuit bears some explanation.

Rather than following a retreating enemy the pursuing units move along routes parallel to the enemy's retreat. The logic is that they attempt to outdistance the enemy and to then split the withdrawing columns into small groups through ambushes and meeting engagements from the flank and rear, and destroy them. Airborne forces and preplanned nuclear and chemical fires are employed as well, to block or to slow down the enemy's withdrawal. The pursuit is continued day and night and is terminated only on the orders of the higher commander or by the encounter of strong enemy resistance.

#### Maneuver

Soviet tank units use two basic forms of maneuver in their actual attack--the frontal attack and the envelopment.<sup>49</sup> The frontal attack is the less desirable of the two and is employed when the enemy does not have an assailable flank. Primarily used in breakthrough operations its purpose is to create a gap in the enemy defense for subsequent exploitation by enveloping maneuvers. As in our own tactics, the frontal attack may also be used as a diversionary attack in support

of a main enveloping force.<sup>50</sup> (See Appendix A)

An envelopment is the preferred form of attack and may be either close or deep in nature. The close envelopment is a comparatively shallow maneuver directed against one or both flanks of an enemy force and is directly supported by fire from units attacking frontally. A deep envelopment on the other hand, is also directed against the flanks or rear of the enemy, but at such a depth that it is beyond close fire support range of other friendly units. A good example of this might be during the pursuit when a unit is attempting to rapidly outflank the enemy on a parallel axis while its parent unit is hitting it from the front. Normally a unit employed in a deep envelopment is reinforced to act independently, and its size is usually not less than a battalion.<sup>51</sup>

A tank division will normally attack with two or three tank regiments in the first echelon, with the organic motorized rifle regiment in either echelon depending on the situation, to augment the power of the tanks and to provide anti-tank support.<sup>52</sup> At regimental level the attack is normally conducted with two tank battalions in the first echelon. On a wide front the tank battalion will attack in a line formation, usually with three companies forward with a platoon in battalion reserve. Other formations, such as the echelon right and left could also be used based on the tactical situation, however these formations are normally employed at subunit level. Broken down a bit further, both tank and motorized rifle companies generally attack in one echelon with

three platoons in line and no reserve.<sup>53</sup> As a rule, as in our own tactics, tanks operating with infantry will have an interval of 150-200m apart; in the absence of infantry support the interval is lessened with only 50-100m between vehicles.<sup>54</sup>

Like our own forces, the Soviets place much doctrinal emphasis on night operations, river crossings and CBR operations, stressing their importance in the overall achievement of victory in battle. Unlike us, the Soviets literally put their training, troops and machines where their doctrine is and in so doing are apparently very capable in actually carrying out these operations.

#### Night Operations

The Soviets hold, as indicated, that around-the-clock operations are essential for victory. By asserting the offensive on a constant basis they maintain an uninterrupted momentum of attack and keep the enemy at a disadvantage both tactically and physically. Keeping with this line of thought, night operations have been given a great deal of importance in the implementation of their tactical doctrine. Soviet units are well trained in night operations and devote up to one-third of their training towards this end.<sup>55</sup> As in our own forces their units are equipped with a myriad of night vision devices both for the individual soldier as well as for most tactical vehicles and weapons. Night operations are no longer considered as special operations to the Soviets, but rather only an "ordinary phenomenon of the offense."<sup>56</sup> Night



time facilitates secrecy in moving troops up to the forward edge and shifting into the attack, and it thus makes it easier to achieve surprise during an attack. The Soviets feel also that the surprise achieved will add greatly to the confusion of the enemy and thus vastly reduce their own losses.<sup>57</sup> Much emphasis is still placed on speed and rapid advancement, however, and much more detailed planning of an attack is required.

As in our own tactics, many more control measures are necessary and plans are based on careful reconnaissance, simplicity of maneuver, speed of execution, and surprise. Ideally a daytime and a night reconnaissance is made prior to an attack, specifically orienting on easily recognized reference points, marking the axis of advance and issuing the azimuth for the direction of attack. Coordination of boundaries and use of artillery fire is given large emphasis. Tank units are accompanied by motorized rifle and artillery units for night offensives and tanks move to their line of deployment in march formation under cover of artillery and lead the assault in combat formations. Emphasis is placed on destroying enemy pockets of resistance without maneuvering at the start of the attack. Tank units attempt to advance directly along predesignated routes using their directional gyro compasses and reference points.<sup>58</sup> Azimuths are used to reorient tanks that deviate from their routes. Additionally, it is common practice for a tank to be assigned several riflemen to aid the tank crew in locating anti-tank weapons and obstacles.<sup>59</sup> Night attacks are most often launched two or

three hours before dawn to permit daylight exploitation of success. The tempo of the advance continues throughout the following day and night, if necessary.

#### River Crossing Operations

River crossing operations are another area of importance to the Soviets. They are well aware of the numerous water obstacles in Central Europe that they will have to negotiate and their equipment, organization and training are therefore designed to ensure that river crossings are regarded as the normal part of a day's advance and not as a special operation as we would envision it. To the Soviets, closing on a river line or consolidating a bridgehead are not regarded as separate phases of the battle--rivers are obstacles and not objectives.<sup>60</sup>

Two types of assault crossings are evident--the hasty and the deliberate crossing.<sup>61</sup> The desired method is the hasty crossing and every attempt will be made to seize and secure crossing means intact by closing with the withdrawing force or by pursuing them so closely as to prevent effective demolition of crossing points, such as bridges. Heliborne forces or forward ground elements of the attacking forces will attempt to seize the crossings in advance of the main body and reconnaissance and march security elements will attempt to cross immediately on reaching the obstacle in order to affect all-round security of the site. Bear in mind that all APC's, and wheeled reconnaissance vehicles of the Soviets are amphibious with no preparation required for water operations.

The deliberate crossing is normally used upon failure of the hasty crossing or if a large, well defended water obstacle has to be crossed. In either type of crossing the key to their success lies in thorough reconnaissance, detailed planning, neutralization or destruction of the enemy in the area of the obstacle by nuclear, chemical or conventional fire, skill and speed on the part of the engineers, crossing on a broad front, and overall speed and surprise of the entire operation.<sup>62</sup> The Soviets have devoted much research and training towards their river crossing operations and have a variety of equipment available. Among these are tank launched bridges (similar to our own AVLB), truck launched pontoon bridges (which we have copied wholesale), amphibious bridge sections or ferries, and tracked self propelled ferries.<sup>63</sup> Additionally, the majority of tanks have the capability of crossing underwater utilizing snorkels up to a depth of 5.5m.<sup>64</sup> Preparation of the site is required and the tank requires from 1-1½ hours of preparation. In that snorkeling tanks are vulnerable to underwater obstacles, soft river beds, currents and debris, however, this procedure is slow and somewhat hazardous and whenever possible the Soviets utilize their bridges and ferries for crossing water obstacles.<sup>65</sup>

Normally the first echelon battalions will move under cover of darkness to assembly areas about 1½km from the river. The actual assault crossing is usually made just before dawn preceded by nuclear strikes and an extensive air and artillery preparation of about thirty minutes duration.<sup>66</sup> It is estimated that a division can cross a river in less



than eight hours after the crossing operation starts.<sup>67</sup> As is evident, however, tanks are normally not in the leading elements during a river crossing, specifically due to the preparation time required and the lack of speed during the crossing and subsequent regrouping, even with their crossing "on the march." This restriction, none the less, is only a temporary factor.

#### Chemical-Biological-Radiological Operations

As has been stressed throughout this chapter, CBR warfare as well as CBR defense plays a large role in the Soviet offensive. Quite naturally, then, tank units are trained extensively to operate in a nuclear, biological, and chemical environment--not only in defense of enemy CBR attacks, but from the contamination spread by their own weapons as well. Chemical defense platoons are assigned to tank, motorized rifle, and parachute regiments and there is a chemical defense company at division level. These units are responsible for detecting and warning of CBR contamination, CBR training, and assisting units in both personnel and unit decontamination.<sup>68</sup> More will be said about these units in a later chapter.

Audible and pyrotechnic alarms are used to warn troops of imminent CBR attack as well as are encoded messages over the radio. Each crewman has a protective mask and protective clothing which are donned on order, however the mask causes severe limitations in visibility and the rubberized suit, if worn for prolonged periods, considerably reduces troop

effectiveness,<sup>69</sup> especially in a buttoned-up tank during warm weather. In the more modern tanks and other AFV's, numerous CBR defensive systems have been incorporated utilizing the actual shape of the vehicle and pressurized hulls, to radiation sensors that halt the tank automatically upon detecting a contaminated area.<sup>70</sup> These features will be covered in more detail in a later chapter.

While decontamination operations are not critical during the attack, they are employed following the attack. Tank crews brush loose material from their vehicles as soon as possible and utilize what personal and vehicular decontamination kits they have at the time. As soon as possible thereafter, the unit matches up with a division level decontamination point, usually in the rear area, where the men are more completely decontaminated and the vehicles are pressure washed to complete the process.

Although it is true that much planning and extensive realistic training and exercises have been implemented concerning Soviet CBR defense, it is also true that their system has some inherent weaknesses as were briefly mentioned. The actual chaos, death and confusion of a real battle under CBR conditions cannot be duplicated and what actually happens to the Soviet soldier and units in battle may be completely different in a negative respect from what is optimistically planned. The fact still remains, however, that the Soviets are the most CBR conscious and CBR qualified force in the world at this time.

### Troop Replacement

One distinct difference from Western practice is the Soviet policy of replacement of troops. While individual replacement is the rule for most Western powers, the Soviets call for the infusion of entire units into battle.<sup>71</sup> Again, the Soviet system is designed for a brief, high intensity encounter, wherein decimated or combat weary troops are replaced by fresh divisions arriving from the rear. NATO's present reinforcement capability is estimated at two to five divisions in the first thirty days following the outbreak of war. The Warsaw Pact is estimated to be able to field twenty-five to fifty divisions in the same amount of time.<sup>72</sup> The Soviet logic behind this, as I have mentioned, stems from Sokolovsky and maintains that massive reserves must be on hand from the outset of the conflict in order to replace the large simultaneous losses that will accrue in nuclear war.<sup>73</sup>

This logic is countered somewhat, however, by the obvious chaos that will probably ensue when a fresh division replaces another. By this doctrine, troops and commanders who have acquired knowledge of the terrain and have learned the characteristics of the opposing force are removed from the scene and the fresh division, largely inexperienced and unfamiliar with the local situation, is then thrust into their place. The confusion and chaos that reigns over a battlefield make this in itself a risky and hazardous operation which will quite probably overshadow the benefit of the insertion of rested troops.<sup>74</sup>



### Future Trends of Armored Doctrine

We have seen in this chapter that the Soviets plan to deal with "Imperialist Aggression" through an intense short war dominated by the offensive, nuclear weapons, and massive numbers of troops. Now that they have the largest land army in the world, however, where do they go from here? Will their military doctrine drastically change in the near future or will the actual wartime implementation of their doctrine be basically the same as they hold now? What will the role of armor be in a future war? The answers to these questions are pure speculation, however there are trends that seem to have evolved in recent years.

It doesn't look as if current Soviet tactical doctrine will change appreciably except to integrate new technologically superior weapons into her inventory. The new T-72 main battle tank is a good example with its laser range finder and automatic loading system. The basic tenets of high speed, surprise, and mass will probably remain the same for quite some time. These have been proven in battle and as far as the Soviets are concerned will most likely serve quite well in future conflicts. Some changes are evident, however. As an example, the Soviets have not yet changed the order of battle in their East German divisions, however these same divisions in the last five years through internal reorganization have increased in manpower by over 68,000 men.<sup>75</sup> Additionally, a typical motorized rifle division now has over fifty percent more tanks organic to it than it had five years ago.<sup>76</sup> These

changes are significant in that they strengthen the belief in the existing doctrine of mass and tank heavy forces.

Whether this doctrine is modified based on our development of the neutron bomb remains to be seen, however it may well have some impact on the massed penetrations envisioned by the Soviets. Quite probably, however, the Soviets will not adapt their tactics to this new threat due to the fact that they already expect heavy casualties to begin with and have and will put a great deal of emphasis on their massive reserves and their replacement policy.

With the ever increasing numerical trend towards men and machines, I do look for a more active and aggressive role of the Soviet leadership, especially at the lower unit levels. This is, I believe, a great weakness of their present doctrine in that the subordinate leaders at platoon and company level are allowed no initiative at all in tactical matters, irregardless of their publicized role. In battle, time will be of the essence and initiative, aggressiveness and tactical expertise of the younger officers will be essential for the survival of their men and the tactical success of their units. With this in mind, I believe some modifications in command and control may quite probably be evident in the not to distant future.

In response to the last question, I feel very strongly that Soviet armor will always have a role on the battlefield, both nuclear and conventional. As with any other weapon system, the tank will undoubtedly become more powerful and

efficient as armored technology advances, but their role as the "fist" of the Soviet Ground Forces will not change. I feel certain that the Soviet armored doctrine that has evolved over the last forty years from that first laid down by Marshal Tukhachevsky will undoubtedly still hold true in the battlefield of the future.



## CHAPTER II FOOTNOTES

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<sup>9</sup>Sokolovsky, Military Strategy, p. 353.

<sup>10</sup>The Defense Intelligence Agency, The Handbook on Soviet Armed Forces (n.p.: n.pub., 1978), p. 8-1.

<sup>11</sup>Erickson, USSI Report 76-2, p. 31.

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<sup>14</sup>Erickson, USSI Report 76-2, p. 32.

<sup>15</sup>Ibid.

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<sup>19</sup>CPT Eugene D. B  tit, "Soviet Tactical Doctrine and Capabilities and NATO's Strategic Defense," Strategic Review, (Fall, 1976), p. 96.

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<sup>22</sup>Ibid.

<sup>23</sup>Ibid.

<sup>24</sup>MAJ Edward H. Cabaniss IV, The Soviet Tank Battalion in the Offense, unpublished thesis (U. S. Army Institute for Advanced Russian and East European Studies, Garmisch, Germany: 1976), p. 13.

<sup>25</sup>Erickson, USSI Report 76-2, p. 76.

<sup>26</sup>USAITAD, 14-U-76, p. 9.

<sup>27</sup>Erickson, USSI Report 73-1, p. 46.

<sup>28</sup>Ibid.

<sup>29</sup>Sokolovsky, Military Strategy, p. 359.

<sup>30</sup>Savkin, Tactics, p. 137.

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<sup>32</sup>John Erickson, The Soviet High Command, (New York: St. Martin's Press, 1962), p. 443.

<sup>33</sup>Sidorenko, The Offensive, p. 95.

<sup>34</sup>Cabaniss, Tank Battalion, p. 10.

<sup>35</sup>Sidorenko, The Offensive, p. 99.

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<sup>37</sup>Sidorenko, The Offensive, p. 99.

<sup>38</sup>Ibid., p. 108.

<sup>39</sup>Ibid.

<sup>40</sup>Ibid., p. 142.

<sup>41</sup>Cabaniss, Tank Battalion, p. 9.; originally from COL P. N. Konopliya and COL N. A. Maikov, Tankovyi Batal'on v Boiu (Tank Battalion in Battle), (Moscow: Military Publisher of the Ministry of Defense, USSR, 1972), p. 15.

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<sup>43</sup>Cabaniss, Tank Battalion, p. 10.

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<sup>49</sup>DA, FM 30-40, p. 5-11.

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<sup>51</sup>Cabaniss, Tank Battalion, p. 12.

<sup>52</sup>Erickson, USSI Report 76-2, p. 77.

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<sup>56</sup>Sidorenko, The Offensive, p. 200.

<sup>57</sup>Ibid., p. 201.

<sup>58</sup>DIA, Company Tactics, p. 40.

<sup>59</sup>Sidorenko, The Offensive, p. 203.

<sup>60</sup>USAITAD, 14-U-76, p. 197.

<sup>61</sup>Ibid., p. 195.

<sup>62</sup>Ibid.

<sup>63</sup>DIA, Company Tactics, p. 43.

<sup>64</sup>Ibid., p. 45.

<sup>65</sup>Sidorenko, The Offensive, p. 190.



<sup>66</sup>USAITAD, 14-U-76, p. 199.

<sup>67</sup>Ibid., p. 197.

<sup>68</sup>DA, FM 30-40, p. 6-105.

<sup>69</sup>DIA, Company Tactics, p. 21.

<sup>70</sup>U. S. Army Armor School, ST 30-40-1, Selected Soviet Weapons and Equipment (Ft. Knox, Kentucky, 1976), p. 5-1.

<sup>71</sup>Sokolovsky, Military Strategy, p. 358.

<sup>72</sup>Bétit, "Doctrine;" p. 101.

<sup>73</sup>Sokolovsky, Military Strategy, p. 246.

<sup>74</sup>GEN Michael S. Davison, "The Military Balance in Central Army Group," Strategic Review, (Fall, 1974), p. 17.

<sup>75</sup>Erickson, USSI Report 76-2, p. 20

<sup>76</sup>Ibid.

### CHAPTER III

#### ORGANIZATION AND EQUIPMENT

Since 1960 the Soviet armed forces have been organized into five distinct combat services, each under a Commander-in-Chief who also holds the position as a Deputy Minister of Defense. These combat services are the Strategic Rocket Forces, the Air Defense Forces, the Ground Forces, the Air Forces, and the Navy.<sup>1</sup>

The purpose of this chapter will be to examine the organization and equipment of the armored forces found within the Ground Forces combat arm. To place the discussion into a logical perspective, I have divided the chapter into two parts, each dealing respectively with organization and equipment. Part one will be divided into three sections. The first section will be concerned with the evolution of Soviet organization since 1945 and will also discuss the basic tenets for today's unit structure. The second section will be oriented strictly on the Ground Forces and will focus on its strength and organization. The third section will be oriented in greater detail towards the tank units found in the Ground Forces and will be concerned with the organizational role that the tank forces have in relation to the Ground Forces as well as to the other elements such as the motorized rifle troops. The second part of the chapter will examine the

continued evolution of armored vehicles from 1945 until the present.

### Organization

#### Evolution of Soviet Organization Since 1945

Until the late 1950's the overall structure of the Soviet armed forces remained basically unchanged from what it had been during World War II.<sup>2</sup> During the war the trend in the organization of formations and units had been to make them more compact, maneuverable, and better controlled. The size of the line, support and maintenance subunits was reduced while their fire power and striking force rose.<sup>3</sup>

Today this basic structural trend continues, however with the advent of nuclear weapons and other technically advanced weapons fundamental changes in the nature of modern war as well as in the methods and forms of combat operations have evolved. Consequently, they have had a substantial influence on the structure and organization of current formations and units of the Soviet combat arms.

As discussed in the previous chapter the current offensive doctrine advocated by the Soviets is dominated not only by nuclear weapons but also by the fluidity of the battlefield. Speed and mobility are paramount and modern formations and units have been completely motorized, "significantly improving their mobility and raising their protective capabilities against weapons of mass destruction, particularly in the tank troops."<sup>4</sup> The equipping of troops with nuclear weapon systems as well as qualitatively and quantitatively better conventional ones



have vastly raised their firepower, attack strength, and their maneuverability and have thus given today's units the capability of independent operation as well as the organizational capability of blending well with other units for any combined arms operation. An important demand placed on today's organizational concept is the ability to quickly create the needed grouping of forces and means to reinforce motorized rifle and tank units with subunits from other branches. Commonly known as tailoring, this concept rests on two basic tenets: triangulation and the "building block" approach.<sup>5</sup>

Triangulation is common to Soviet organization and is fairly logical, if for nothing else than for simplicity. Normally used at division level and below, the triangular concept may be generally described through the following example. A typical tank division has three tank regiments (plus a motorized rifle and artillery regiment); each tank regiment has three tank battalions; and each tank battalion has three companies. Similarly, the proportion would be reversed in a motorized rifle division (e.g. three motorized rifle regiments, and so on.)

The building block concept complements the triangular approach in affording simplicity of organization and speed of tailoring and is used extensively in all units of the Soviet Ground Forces. For example, the tank regiment has the same general organization, size and equipment whether assigned to a tank division or to a motorized rifle division. Similarly, tank battalions and tank companies generally are the same,

irregardless of their larger unit of assignment, although there are some differences which will be examined later. This concept greatly facilitates training, exchange of personnel and equipment, standardization of maintenance and supply, to say nothing of the obvious advantages during combat operations.<sup>6</sup>

In order to more fully appreciate the organization of the Ground Forces, I believe a brief overview of the higher echelon of Soviet organization is now perhaps necessary.

The senior military official in the Soviet Union is the Minister of Defense. The current holder of this office is Marshal of the Soviet Union D. F. Ustinov who is a member of the Politburo as was his predecessor, Marshal of the Soviet Union A. A. Grechko.<sup>7</sup> The Ministry of Defense has a broad spectrum of activities involving both administrative and political functions. It controls and directs the armed forces mentioned earlier, and sixteen military districts, ten air defense districts, four naval fleets, four groups of forces, and the Warsaw Pact headquarters.<sup>8</sup> It is not my intention to discuss the relevance of each of these particular areas, but rather to focus in on only those areas critical to our discussion.

The armed forces of the Soviet Union are divided into five combat arms. The Strategic Rocket Forces directs all Soviet units possessing strategic (versus tactical) missiles such as the ICBM, IRBM, and MRBM categories. They do not, however, control the strategic bomber aircraft which instead fall under the auspices of the Air Forces. The Air Defense

Forces are responsible for all fighter-interceptor aircraft, anti-aircraft guns, surface to air missiles and related warning and command systems of the Soviet homeland defense. They have no control, however, over the organic air defense elements of the field forces (e.g. the "Grail" missile elements, etc.)<sup>9</sup> These elements are under the control of the Ground Forces, which will be discussed in detail shortly. The Air Forces maintain administrative control over long range, tactical and military transport aviation less the air defense interceptors. Operational control of the tactical aviation, however, is the responsibility of the Ground Forces and the operational control of the strategic bombers and military transport aviation falls under the Ministry of Defense.<sup>10</sup> The last combat arm, the Navy, quite logically directs all Soviet naval forces, including its own naval air arm, coastal defense forces, and the naval marines.<sup>11</sup>

Outside of the Soviet Union the Soviets maintain four major groups of combat forces, each the equivalent of a field army.<sup>12</sup> These are all primarily army units of the Ground Forces with subordinate tactical air elements. Together with the armies of specific Bloc countries they form the armed forces of the Warsaw Pact, currently under the command of Marshal of the Soviet Union V. C. Kulikov.<sup>13</sup> The Soviets consider these Groups of Forces as their main striking force and they are deployed in East Europe as follows: Group of Soviet Forces/Germany (East Germany), Northern Group (Poland), Central Group (Czechoslovakia), and Southern Group (Hungary).<sup>14</sup> There are now thirty-one Soviet divisions in East-Central



Europe with a ratio of sixteen tank divisions and fifteen motorized rifle divisions.<sup>15</sup> The first echelon tank strength of these four Groups of Forces is about 10,500 AFV's along with almost three hundred combat battalions.<sup>16</sup> These divisions are all maintained at a Category One state of readiness; that is, fitted out with their complement of weapons, fuel and supplies (ammunition and fuel for 3-4 days and food for 4-5 days of operations), and with at least 85 percent of their war strength in manpower, if not the total complement.<sup>17</sup> More on categories of readiness will be discussed shortly. Each Group of Forces is capable of being a "front" organization in time of war. Currently the GSFG already has the forces available and the other groups, while smaller, could be rapidly expanded to large, highly capable front organizations.<sup>18</sup>

Another high level military command that has the capability of being organized as a front in time of war is the military district. There are sixteen military districts in the Soviet Union.<sup>19</sup> These are territorial commands which direct the activities of military forces within the nation and do not correspond to the political boundaries of the fifteen republics. The key military districts that border other nations such as the Belorussian or Central Asian military districts are logically more prepared for wartime mobilization upon the outbreak of hostilities, however all military districts are organized along the same lines with basically the same overall mission. Each military district is responsible for the political and combat training of all units under its jurisdiction, and combat readiness for its units up to Army

level. Additionally, other important functions of the command are the registration and induction of draftees, mobilization, civil defense, and pre-military and reserve training.<sup>20</sup> Generally the military district commander has administrative control over all subordinate forces, military schools and other military organizations in his district. Operational control is maintained over all forces except those elements whose mission is considered as strategic such as the long range aviation units and air defense units, which come under the operational control of the Ministry of Defense. All elements of the Ground Forces within a particular military district come under that district's jurisdiction.

#### The Ground Forces

The largest component of the Soviet armed forces are the Ground Forces with a strength of about 1,825,000 men.<sup>21</sup> The profile of the Ground Forces is one of a highly mobile force with powerful armored and mechanized infantry elements and with nuclear (and chemical) weapons organic down to division level. Backed by an inventory of 41,500 tanks, 37,500 armored personnel carriers, 17,500 guns and 2,500 helicopters,<sup>22</sup> both manpower and materiel thus combine to make the present Soviet Ground Forces the most powerful land army in the world.

The missions of the Soviet Ground Forces are deterrence, defense, and offense in the land theaters of operations and the prime area of responsibility of these troops is currently the territory of the USSR and Warsaw Pact member states. The ultimate defeat of the enemy, as we have discussed in the

previous chapter inevitably rests with the Ground Forces. The main tasks of the Ground Forces are to annihilate the enemy through rapid offensive movements and to gain possession of vital installations and regions.<sup>23</sup> We have seen in the last chapter how the Soviets plan to achieve this end--let us now examine the tools with which they will fight.

Looking at the Ground Forces we can see that it is broken into several combat branches, special troops and services, much like in our own U. S. Army. The five combat arms of the Ground Forces are the Motorized Rifle, Tank, Artillery, Airborne, and Air Defense of the Ground Forces.<sup>24</sup> Each bear a brief explanation of their function.

The basic arm of the Ground Forces are the motorized rifle troops<sup>25</sup> and they closely parallel the mechanized infantry elements of the Western powers. There is no "foot soldier" or light infantry in the Soviet Ground Forces. All infantry units, from rifle squad to division, are fully mechanized.<sup>26</sup> Incorporating elements of tank and artillery forces the motorized rifle divisions are well suited for either independent or combined arms operations on either the nuclear or conventional battlefield and make up roughly two-thirds of the Ground Forces' divisional strength with a current strength of 110 divisions.<sup>27</sup> A motorized rifle division will have organic combat support units such as engineers, CBR defense, reconnaissance, signal, artillery and rear services. A tank regiment is added to its three motorized rifle regiments to round out the division's combat strength.



The Tank troops are the "fist" of the Soviet Ground Forces and tank divisions make up the other one-third of the divisional strength of the Ground Forces, currently numbering about fifty divisions.<sup>28</sup> As indicated in the previous chapter, it is the speed, mobility and firepower of the tank units which carry the offensive action to its fullest. Inherent to this branch is their ability to function virtually unhindered in a nuclear environment by virtue of their vehicular capabilities as well as their speed. More will be addressed to the tank troops shortly.

The Rocket troops and Artillery are generally considered as one branch and are much more prevalent in Soviet Ground Forces than in most Western armies.<sup>29</sup> Massive artillery firepower and tactical nuclear weapons are paramount to the success of Soviet military doctrine and with this in mind, the Soviets have artillery divisions as well as elements organic to tactical units down to regimental level. The vast majority of conventional artillery pieces are towed, however self-propelled guns are being introduced at an ever increasing rate.<sup>30</sup> Weapons of Soviet artillery units include conventional guns, howitzers, mortars, multiple rocket launchers, free rockets, tactical ballistic missiles and anti-tank guided missiles.<sup>31</sup>

The Air Defense troops of the Ground Forces include those anti-aircraft elements that are organic to combined arms formations, such as most divisions. One might best think of the air defense troops as administratively being an autonomous branch, however being operationally utilized and totally absorbed by their tactical parent unit, be it a motorized rifle

division or a tank division. These air defense elements of the Ground Forces provide tactical air defense only within the particular tactical organization to which it is attached and are separate from the troops who provide strategic air defense of the country.<sup>32</sup>

The last combat arm of the Ground Forces are the Airborne troops who are present in larger numbers in Soviet forces than in any Western army. With a current strength of about eight airborne divisions,<sup>33</sup> these troops are primarily intended for rapid deployment in the enemy's rear or to secure friendly flanks. With the increasing military strength of the Soviets and the projected speed of advancement during battle, the airborne forces are gaining significance as a necessary force. In line with this, the airborne forces, while considered part of the Ground Forces, are operationally controlled by the Ministry of Defense as a quasi-strategic force. They would not become subordinate to a field command unless released by the Minister of Defense.<sup>34</sup>

As mentioned, the organization of the Ground Forces places much emphasis on relatively small, basic units which are the building blocks for the larger forces that would have to be organized rapidly with minimum tailoring before they were ready for combat. With this basic tenet in mind it is perhaps best for us to examine the organization of the field forces as they would be deployed in time of war. Organizational charts for all units under discussion are found in Appendix A.

Both the military districts within the Soviet Union and

the Groups of Forces located in the East European countries are major operational combined arms commands in peacetime, as we have discussed. In war, however, both of these commands can be transformed into "Fronts" or, in the case of the military districts, some can continue to function as territorial commands with most of their combat and corresponding support forces being shifted to different field commands.<sup>35</sup> Directly subordinate to the Ministry of Defense, generally speaking the front is the largest Soviet Field Formation in wartime and logically its size and composition are dependent upon the mission and tactical situation. Being a tactical and administrative unit, a front is roughly equivalent to a U. S. Army Group and may be composed of three or four combined arms armies (15-20 divisions), one tank army (4-5 divisions), one tactical air army, and other appropriate combat and support elements.<sup>36</sup>

Immediately subordinate to the front is the Combined Arms Army which is the basic Soviet field army.<sup>37</sup> Also a tactical and administrative organization, the combined arms army could be looked upon as basically a motorized rifle unit. Typically it might include four motorized rifle divisions, a tank division, an artillery brigade, missile units, and intelligence, signal, engineer, and chemical units. It additionally maintains bridge and assault crossing elements for the inevitable river crossing operations. By tailoring its mix of tank and motorized rifle divisions and artillery support, the combined arms army can function in either an offensive or defensive role and can adequately cope with



geographical and other various operational restraints. As with a front, the combined arms army reports directly to the Ministry of Defense.<sup>38</sup>

The Tank Army is generally the same as a combined arms army, however it is specifically tailored and organized as an armor-heavy force. It has sufficient motorized rifle elements to rupture and penetrate enemy defenses and to exploit such breakthroughs by driving deep into the enemy's rear. A typical tank army will consist of three or four tank divisions and a motorized rifle division.<sup>39</sup> Here again, the tank army's size and composition is dependent on the mission, enemy situation, and the area of operations.

#### Characteristics of the Soviet Division

There are three different types of line divisions found in the Soviet Ground Forces: Motorized Rifle (110), Tank (50), and Airborne (8).<sup>40</sup> A fourth type of division found only at front level is the artillery division. The motorized rifle and tank divisions, however, form the bulk of the major combat and maneuver elements of the Ground Forces. As discussed earlier, the organizational structure of Soviet divisions is based both on triangulation and the building block approach, with both of these basic tenets evident down to company level organization.

Of the USSR's 168 divisions evident in the Ground Forces, 64 divisions are retained in European Russia, 6 divisions are in Central Russia, 23 divisions are in Southern Russia, and 44 divisions are currently on the Sino-Soviet border.<sup>41</sup>

The Soviets have additionally deployed 31 divisions into Eastern Europe to augment those of the satellite forces, with a Soviet balance of 16 tank divisions and 15 motorized rifle divisions in those countries.<sup>42</sup> With the inclusion of East European armies there are a total then of 59 divisions overall along the eastern border of Western Europe.<sup>43</sup>

These myriad amounts of divisions are not all maintained at the same peak of readiness as one might originally think. In peacetime the Soviets have three states of readiness for their divisions with Category One, identified earlier, at near or full strength, including at a minimum all of the East European divisions. Category Two divisions are usually at no more than 50 percent strength and Category Three divisions are at cadre strength, with most of the officers and non-commissioned officers, most of the unit's equipment, but only a limited number of enlisted men. The majority of vehicles of Categories Two and Three are "moth-balled" in depots,<sup>44</sup> however all divisions are supposedly capable of being fully mobilized within only a few days after notification.<sup>45</sup>

One important point to remember is the relative comparison of a Soviet division to a U. S. division. Generally Soviet divisions are on equal footing with our divisions materially, but have fewer personnel. The Soviets base their organizational concepts on smaller, highly mobile units with sixteen maneuver battalions per motorized rifle division<sup>46</sup> while our comparable U. S. mechanized infantry division has only ten battalions.<sup>47</sup> More significantly, in keeping with the Soviet reliance on tanks, the motorized rifle division of

some 11,500 troops has thirty-nine more tanks than its American counterpart<sup>48</sup> which by the same token has thirty-three more Sheridans than the Soviets' total of nineteen PT-76 reconnaissance vehicles.<sup>49</sup> Even considering the materiel match a stalemate, the Soviets have accomplished this with about 25 percent fewer personnel.

Soviet tank divisions have about 325 tanks and a motorized rifle division may have up to 266 tanks.<sup>50</sup> This is in comparison to 324 tanks and 206 tanks respectively for U. S. armor and mechanized infantry divisions.<sup>51</sup> Looking at the armored divisions we can easily see the balance of vehicles, however the Soviets can field thirteen maneuver battalions per tank division<sup>52</sup> versus eleven battalions in a U. S. armored division.<sup>53</sup> More significantly, the Soviets accomplish this with more than one-third fewer personnel (9,000 vs 15,400)<sup>54</sup> and the Soviets even come out one tank ahead of us.

The standard Soviet tank division has a ratio of ten tank battalions to three motorized rifle battalions.<sup>55</sup> The comparable figures for a U. S. armored division are six armored and five mechanized infantry battalions.<sup>56</sup> The ratio of tanks to troops in Soviet tank divisions is very high--about 1 to 33; for U. S. divisions it is 1 to 51. In motorized rifle divisions the ratio of tanks to troops is 1 to 53; for U. S. divisions it is 1 to 74.<sup>57</sup>

#### Organization of Soviet Tank Forces

Tank divisions are the main components of tank armies and are also assigned to combined arms armies. Organized with



the principles of exploitation in mind, the principal subordinate elements are the three tank regiments (each with ninety-five tanks), one motorized rifle regiment (with forty tanks), plus artillery and anti-aircraft regiments and FROG and rocket launcher battalions.<sup>58</sup> The artillery and anti-aircraft elements are increasingly becoming self-propelled, phasing out the towed weapons systems. Organic division artillery still includes, however, both towed and self-propelled guns.

A soviet tank division is quite similar in many ways to our own armored division, however there are some very distinct organizational differences. Perhaps the most obvious difference is the number of battalions fielded in both division in relation to the materiel and manpower available, as we have just discussed. Support units are basically similar in that the tank division has organic reconnaissance, maintenance, engineer and signal battalions. There is, however, one rather unique support element organic to a tank (and motorized rifle) division which we do not currently have in our organizational structure--the Chemical Defense company.<sup>59</sup>

This particular unit was created based on the probability of nuclear or chemical warfare in future wars. Currently in a U. S. armored division there is a small chemical section of specialists within the operations section (G3) of the division that is responsible for monitoring the training of all units in the division in CBR defense and for aiding the G3 during actual CBR operations. The Soviets, however, have taken CBR warfare a bit more to task and currently have chemical defense

platoons assigned to tank, motorized rifle, and parachute regiments with a chemical defense company at each division level. These units are autonomous from the combat units and its highly trained specialists are attached to the combat elements as required. Specially trained CBR reconnaissance teams may be assigned down to company level for individual operations.<sup>60</sup>

The chemical defense units are responsible not only for the extensive peacetime CBR training given the units, but are also responsible in war for detecting and warning of CBR contamination, assisting units in both personnel and unit decontamination, as well as having organic to it a myriad of specialized decontamination equipment. This equipment ranges from mobile jet engine powered decontamination units for large scale operations such as vehicle decontamination to CBR oriented expendable resupply items such as protective clothing and personal decon kits.<sup>61</sup>

Each tank division has three tank regiments and a motorized rifle regiment. While the service support units are basically the same, the tank regiment differs from the motorized rifle regiment in that it does not have a motorized rifle battalion. The motorized rifle regiment, on the other hand, does have an organic tank battalion and artillery, and thus is twice as large as the tank regiment with a compliment of 2100 men as compared to 1000 men found with the tanks. Usually task organized under the combined arms concept in combat, the tank regiment will normally have a motorized rifle battalion attached, in which case each of the three motorized rifle

companies will be attached to each of the three tank battalions. The logic behind the reduced number of troops and artillery firepower in a tank regiment is that it is structured for high speed mobility and exploitation of the breakthrough. With the building block concept, a regiment can easily and quickly be tailored to adapt to a given situation when necessary.

Each tank regiment contains three tank battalions. Contrary to the building block approach of "all like units equal," however, these battalions may or may not be equal in strength. Tank battalions of the tank regiment have 31 tanks per battalion (10 in each company and 1 in the battalion headquarters). The tank battalion of the motorized rifle regiment, however, has 40 tanks (13 in each company and 1 in the battalion headquarters.)<sup>63</sup> Both tank and motorized rifle battalions are normally task organized under the combined arms concept with each usually having either a motorized rifle company or a tank company attached respectively. Soviet task organization differs from ours, however, in that they normally operate battalions with three companies and not with four as one would presume.<sup>64</sup> The attached company is divided up and each company is then task organized with a three to one platoon mix, e.g. three motorized rifle platoons and one tank platoon, or three tank platoons and one motorized rifle platoon. The leftover company command vehicle then remains with the battalion headquarters as a combat vehicle, not a command element.<sup>65</sup>

As was evident with the tank regiment, the Soviet tank battalion has no organic indirect fire units (such as mortars)



and must be specifically task organized for a given operation. Generally speaking, the tank battalion is not normally utilized for independent operations but is almost invariably merely a component of a larger regimental operation. With this role in mind, a battalion has the minimum service support elements necessary and these are predominantly maintenance, supply, and signal specialists.

The tank company is the basic building block of the Soviet tank arm and it consists of three tank platoons and a company headquarters. In a tank battalion subordinate to a tank regiment the platoon consists of three tanks, and a tank battalion subordinate to a motorized rifle regiment a platoon consists of four tanks.<sup>66</sup> There are no service support (supply and maintenance) personnel in either the tank company or the motorized rifle company as normally found in U. S. units. The only maintenance capability at the Soviet company level is the tank's "driver/mechanic" (who is in reality only a driver)<sup>67</sup> who performs the basic maintenance of his tank under the supervision of the company technical officer. Ironically the Operator's Manual of the T-62 is classified and not readily available for crew use. The driver must memorize all maintenance checks to be performed on his vehicle. No special tools or recovery capability is available at company level, and all but the most simple repairs are the responsibility of the battalion maintenance platoon.<sup>68</sup> These factors in themselves will quite probably prove to be a serious weakness in time of war.

For a more complete understanding of the capabilities of

a Soviet tank company, the command and control of the company is worthy of a brief examination. The company commander and platoon commanders are officers who, in addition to their command duties, are also the tank commanders of their individual tanks. Although they are well trained in the technical aspects of their duties, however, they appear to lack initiative and experience. As an illustration, while the company commander does have the authority to call for supporting fires during combat, that is just about the extent of this freedom of initiative. The rest of his authority is restricted to maneuvering the whole company in well rehearsed combat formations, and even in this he is very closely supervised by the battalion commander. Similarly, the platoon commanders react to the commander's orders and have no independence in tactical maneuver. Tanks are equipped with radios, but only the company commander has the unrestricted authority to transmit--all others are on radio listening silence. Maps are classified and are carried only by officers<sup>69</sup> thus the majority of the tank commanders do not have the means to relay targets of opportunity to fire support units since they have neither the maps nor the authority to initiate radio transmissions. More will be addressed towards the capabilities of the tank company and its personnel in a later chapter.

We have now seen how the Soviet Ground Forces, specifically the tank forces, have been organized and structured to best carry out the offensive doctrine discussed earlier. One might say that Soviet military doctrine goes hand in hand with their unit organization, made all the more evident taking into

account armored doctrine and tank unit organization. The fact that the Soviets don't abide by a rigid approach towards their force structure but rather place prime emphasis on flexibility and reaction is an important strongpoint of their doctrine. The ability to place troops and units as quickly as possible where they are most needed and with little, if any organizational restructuring will definitely be an asset during the confusion and chaos of battle.

The organization is such that it can be very quickly altered to suit any tactical situation or mission by virtue of its modular building block concept. It is simple throughout in that like units are found throughout the unit structure and all can function quite adequately whether they be in a tank, motorized rifle, or some other configuration. No massive reorganization is required. This is a critical factor considering the immense size of the Soviet armed forces and taking into account the offensive doctrine to which they are committed--speed is critical to the attainment of their goals and consequently time gained through rapid manipulation of their troops and units is all important.

It is perhaps best to now examine the equipment and vehicles with which the tank forces are fitted out in order to more fully appreciate the organizational concepts of the Soviets.

#### Equipment

The Soviet command places almost unbounded faith in the armored fighting vehicle, the tank. In the first chapter we



have seen the complexity of the early evolution of armored warfare and we have seen the inherent problems that existed when the Soviets tried to combine the speed and mobility of their tank forces with the slow dismounted operations of the infantry. Since World War II, the general evolution of the equipment and organization of the Ground Forces has been to increase the strength and capability of their armored strike forces followed by the introduction of armored personnel carriers (APC's) and light fighting vehicles to permit the infantry to keep pace with the tank forces.<sup>70</sup> Keeping in mind our recent discussion of Soviet unit organization we will now discuss the evolution of Soviet armored fighting vehicles since World War II in order to perhaps gain a greater understanding of their role in the current organizational structure of the Soviet armored forces.

The Soviet's intense concentration on production during the war has had a continuing impact on the research and development process since World War II. Behavior, values, and operating procedures consistent with mass production have continued to shape Soviet development activities in armor as well as in other weapon systems. This emphasis on high production rates, simplicity in design, and product improvement has been clearly evident since the war.

#### Evolution of the Medium Tank Since 1945

As indicated in chapter one, the Soviets during the war had adopted the "two-tank" policy of having both a medium (T-34) and heavy (KV) tank to carry out its armored operations.

in 1943 the KV series was superceded by the new JS (Joseph Stalin) series heavy tank.<sup>71</sup> While initially mounting a similar turret and gun to that of the KV-85, this was later replaced by a much more powerful 122mm main gun.<sup>72</sup> Basically the JS series tank weighed about 45 tons, was manned by a crew of four, powered by a 600hp V12 diesel and had a maximum speed of about 40 km/hr.<sup>73</sup> The characteristics of extremely cramped crew space and meager ammunition stowage, e.g. 28 rounds, were still prevalent, however. In all, three versions of the JS series were built, culminating in the JS-III introduced in 1945, too late, however, to see action during the war. The JS-I and JS-II, on the other hand, saw continuous action in every campaign from 1944 until the end of the war. The final model, the JS-III, also saw the introduction of the prototype of the low silhouette elliptical turret design which was adopted for the post war T-54/55 and T-62 series<sup>74</sup> and which is currently the most obvious characteristic that differentiates todays tanks of the Soviet Union from those of the West.

At the conclusion of hostilities in 1945 the Soviets had vast quantities of medium tanks represented by the T-34 and an assortment of heavies including the three JS models and some obsolete KV models. The well proved "two-tank" policy was continued, however plans were underway to develop improved version of each type.

The first attempt at a new medium tank was the 34 ton T-44. This was a short lived modified version of the T-34, with the only real contribution to later development in that it was the first tank in which transverse mounting of the

engine was adopted in order to economize on space,<sup>75</sup> a concept which has continued on through today's most current Soviet AFV's. Very few T-44's were produced, however, and the T-34/85 remained as the standard Soviet medium tank until the introduction of the T-54 in 1954.

The T-54 was the prototype for all subsequent models of Soviet tanks, incorporating the elliptical turret design first seen in the JS-III and the transversely mounted engine of the T-44. It was generally developed from the latter and mounted a 100mm gun, the same weapon as mounted on the SU-100 assault gun, however with the effective range of the weapon being increased to 1500m with a rate of fire of 3-5 rounds per minute.<sup>76</sup> Manned by a crew of four, the T-54 was powered by a 520hp improved version of the old T-34 pack giving it a speed of 48 km/hr. It incorporated the proven Christie suspension, had additional armament of one 7.62mm coaxial machine gun and one 12.7mm anti-aircraft machine gun, and weighed only 36 tons.<sup>77</sup> Five models of this tank were produced and each was basically identical to its predecessor with only a few exceptions. In 1955 large scale production began and the main gun acquired a bore evacuator at the muzzle end, and the gun was stabilized for the first time both horizontally and vertically by means of electrohydraulic and electromechanical drives.<sup>78</sup> In 1961 the vehicle was redesignated as the T-55, lost its anti-aircraft machine gun, and acquired infra-red and snorkel capabilities.<sup>79</sup> True to Soviet production policy, the T-54/55 series tanks are fairly simple and reliable, offering a low silhouette of only eight feet and having good cross country



mobility. Its chassis is the basis for many current armored support vehicles, among them the ZSU-57 anti-aircraft vehicle, a bridge layer (MTU-20), an engineer tank with bulldozer or crane (much like our own M-60A1 CEV), and a tank recovery/repair vehicle.<sup>80</sup> Produced in vast quantities, the T-55 is still in active service today with the bulk of the inventory in the hands of Soviet allies and reserve units.

Meanwhile, however, in the late 1950's the West had begun to orient its new developments towards combat at longer ranges, contrary to the experience gained in World War II during which average tank engagement ranges were around 500m and infantry anti-tank weapons were even less.<sup>81</sup> With the advance of technology there was now talk of ranges of 2000m and over, despite the fact that recent NATO studies had shown that tank battle encounters occurred mainly in the 500-800m range bracket.<sup>82</sup> It was possibly these estimates of future combat range coupled with the desire for a more powerful gun that led the Soviets to develop the T-55 even further, culminating in the T-62 which was fielded in 1961 and introduced publicly in 1965.<sup>83</sup>

The T-62 is now the main battle tank of the Soviet Union. It is somewhat similar to the T-55 having the same chassis with only minor modifications to the overall height of the hull, turret ring diameter and torsion bar spacing. The most significant difference is that a completely new elliptical turret was developed for the T-62 mounting a 115mm smoothbore gun which can fire fin-stabilized rounds with a muzzle velocity of 1630m/sec,<sup>84</sup> a vast increase over the T-55.

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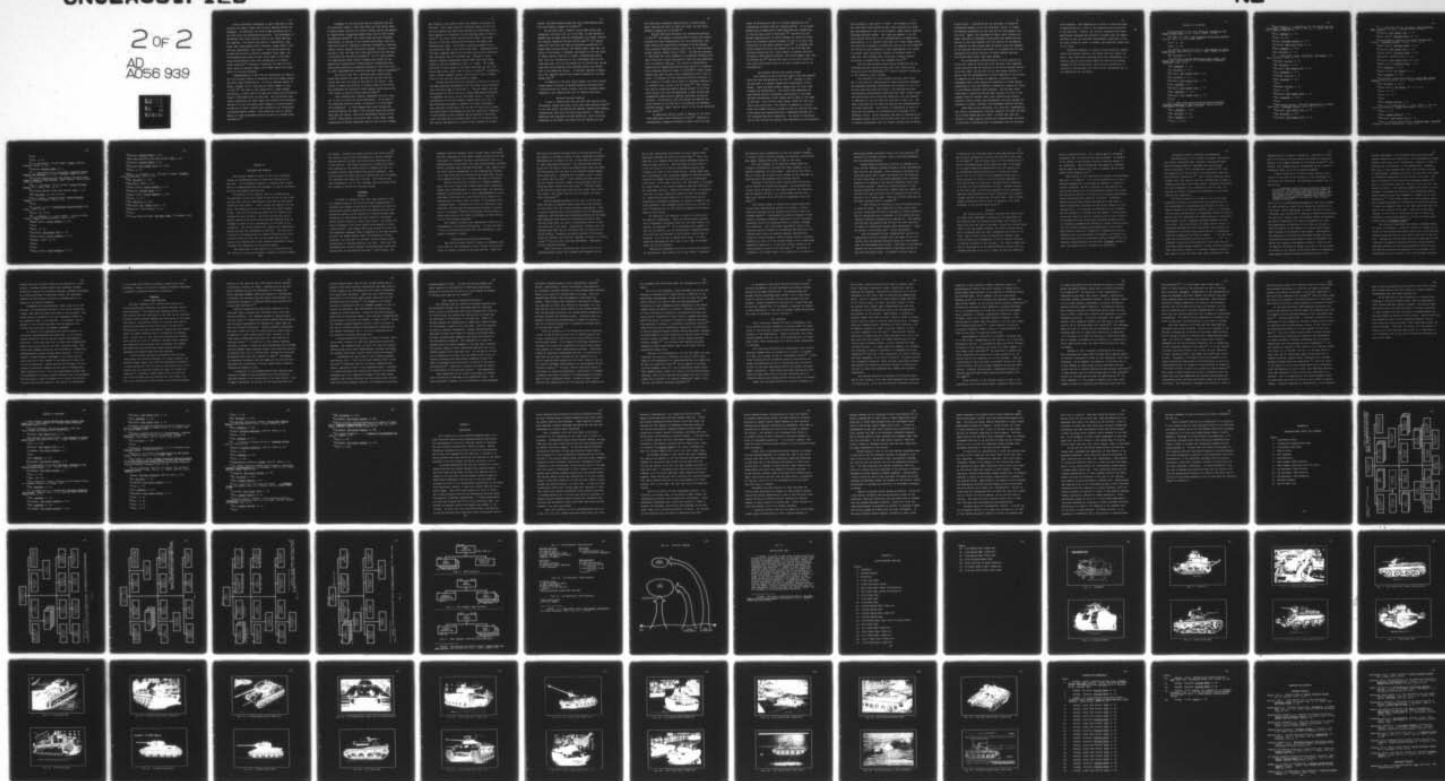
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Soviet smoothbore technology in their tank guns is significant and plays a large role in their armored vehicle development. As mentioned, the U5-TS 115mm smoothbore gun of the T-62 fires fin-stabilized projectiles. The advantages of smoothbore over rifled barrels (such as our 105mm tank gun) are numerous. The barrels are easier to manufacture, they weigh less, have greater muzzle velocity, longer barrel life, and very importantly, less recoil. This latter aspect has allowed the Soviets to develop remarkable light tanks, the T-62 weighing only about 40 tons, while tanks of the West, using rifled barrels, have been constrained to a heavier recoil platform.<sup>85</sup> Accuracy is basically the same for both types except at greater ranges (over 2000m) where the rifled barrel is the more accurate.

Characteristics of the T-62 are essentially the same as the T-55 visually except as indicated about its weapon system and other inner modifications. It has an improved engine of 580hp, a weight of 40.2 tons and an overall height of only 7.8 feet.<sup>86</sup> The tank is also armed with a 7.62mm coaxial machine gun, a basic load of 40 main gun rounds and an effective range of 1800-2000m with its main gun. The T-62 series tank mounts essentially the same simple fire control and snorkeling equipment of the T-55 series tank (capable of fording depths as deep as 17 feet), however also features an air filtration/overpressurization system. This allows the crew to operate safely in a CBR environment without protective clothing while buttoned up.<sup>87</sup>



Strengths of the T-62 which may be identified are its low silhouette (about 3 feet lower than our M-60 series tank), a simple stadia reticle fire control system, active and passive IR capabilities, snorkeling capabilities, and its CBR protection/warning system.<sup>88</sup> This Soviet tank has been developed specifically to operate on the nuclear battlefield, with minimum cross section, radiation protection furnished by lead and plastic liners, special ventilation systems, automatic control systems to seal the tank from blast effects and also monitors to activate the ventilation systems.<sup>89</sup> One of these systems, the radiological alarm system, automatically shuts off the engine upon encountering a radiologically contaminated area. This action serves as an immediate warning to the crew to put on their individual CBR protective equipment before proceeding.<sup>90</sup>

The vehicle also has a cartridge case ejection mechanism that catches the spent casings from the main gun and ejects them out of a hatch in the rear of the turret. This serves to reduce the build-up of noxious fumes in the turret and eliminates the problem of spent casings cluttering up the floor space, a serious problem during combat.<sup>91</sup>

Like anything else, however, weaknesses are also inherent to the T-62 which are worth mentioning. In the case of the cartridge ejection system, in practice it is sometimes quite dangerous. It often happens that spent casings are projected against the edge of the ejection hatch and rebound back into the turret, often with disastrous results to the crew.<sup>92</sup> Additionally, as in most other Soviet tanks, human engineering is almost negligible and the crew is very cramped

and freedom to move about inside the vehicle is severely restricted. Also, high levels of vibration common to the T-55 and T-62 series also cause crew fatigue and contributes in no small measure to a reduction in the fighting power of the vehicle.<sup>93</sup> As in all other current Soviet tanks, the stadia reticle is the only optical aid with which the gunner can determine the range. As a result, precision gunnery is much more difficult than in our M-60 series tank. Compounding this, the tank commander cannot fire the main gun from his position; only the gunner can fire the main gun. Because of their smaller fighting compartments Soviet tanks can carry fewer rounds of main gun ammunition than U. S. tanks. The M-60A1 can carry 23 more rounds in its basic load than can the T-62 series tank with a basic load of only 40 rounds.<sup>94</sup> Considering their limited resupply system, this will also quite probably prove to be a serious shortcoming in combat.

We must now turn back for a moment to look at the fate of the heavy tank and consequently the "two-tank" policy prevalent since the early days of World War II. The war ended with the introduction of the 46 ton JS-III heavy tank and, as mentioned, the emphasis was still on the "two-tank" policy. With the introduction of the more powerful medium tank, the T-54, it was considered necessary to improve its heavy counterpart. This resulted in what was to be the last of this type of tank--the super heavy T-10 weighing 50 tons and mounting a 122mm gun. It was fielded in 1955, however was not publicly introduced until 1957 and had a relatively short life in the Soviet army. The vehicle was manned by a crew of four, powered by a 700hp

diesel, was additionally armed with two 12.7mm machine guns and could attain a speed of 45 km/hr.<sup>95</sup>

By the late 1950's, however, Soviet tank policy had undergone a revision, and, as in the West, it was decided to abandon the two-tank idea and concentrate on a single vehicle, now commonly termed as the main battle tank.<sup>96</sup> The logical reason for this move was that as successive generations of medium tanks mounted heavier and heavier guns, there was virtually no difference in armament performance of the two types of tanks--vehicle size was no longer a determining factor. Thus, with the introduction of the T-62 medium tank and its 115mm main gun, the T-10 was phased out of service and, as has long been Soviet practice with obsolete models, was handed down to the satellite forces. It has been supplied to Egypt, and a new improved version was recently adopted for the East German army.<sup>97</sup>

In addition to the main battle tanks, the Soviet Ground Forces employ a variety of armored personnel carriers which I believe should be briefly touched upon for a greater understanding of the combined arms role of infantry and armor.

#### Armored Personnel Carriers

It was in 1946-48 that the first APC type vehicles were introduced, though these were little more than armored trucks.<sup>98</sup> In the late 1950's the BTR-50P and BTR-60P (tracked and wheeled respectively) came into the Soviet army service. These are amphibious and equipped with CBR protection, carry 12-20 men depending on the model, are armed with one machine gun and



both have been constantly improved upon in recent years. These vehicles are still in wide use today, but are being gradually phased out by the BMP.<sup>99</sup>

The BMP-76PB was introduced into operational service in 1967.<sup>100</sup> As opposed to previous APC's, which were really nothing more than transportation for the infantrymen, this newer vehicle was specifically designed to be an armored troop carrying fighting vehicle, much like our proposed Mechanized Infantry Combat Vehicle (MICV). The BMP was designed to facilitate the close operation of mechanized infantry with tank forces and to also incorporate a tank killing capability with its powerful 73mm gun. The vehicle is additionally armed with the SAGGER anti-tank missile system (4-5 missiles with a maximum effective range of 3,000m),<sup>101</sup> a 7.62mm coaxial machine gun, and can carry eight infantrymen with a crew of three. In keeping with the speed and mobility required, it has a speed of 65 km/hr and a range of 350-400km enabling it to maintain close contact with the tanks.<sup>102</sup> This vehicle also has an overpressurization system similar to the T-62 which permits the crew and passengers to pass through CBR contaminated areas without wearing individual protective clothing. As mentioned, both the BTR-50P and BTR-60P are being replaced by the BMP and it is becoming the standard armored infantry combat vehicle (AICV) in the Soviet motorized rifle units.<sup>103</sup>

An additional vehicle worthy of mention is the PT-76 light amphibious tank introduced in 1952.<sup>104</sup> Employed in reconnaissance companies attached to armor units the term

"tank" is deceiving in that it is better equipped for reconnaissance missions than for armored battles. It is thinly armored and is armed with a 76mm stabilized gun, weighs only 14 tons and has a crew of three men.<sup>105</sup> The PT-76 is completely amphibious and is driven through the water by a twin water jet propulsion system--because of this it is also used extensively by the naval infantry units.<sup>106</sup> In keeping with Soviet production policy the chassis of the PT-76 has been utilized extensively for a whole family of armored vehicles, including a FROG missile launcher, the ASU-85 assault gun, and the BTR-50P APC,<sup>107</sup> however the value of the PT-76 itself in full scale hostilities would be, at best, dubious due to its vulnerability.

#### New Armored Vehicles and Current Trends

Very recently a new Soviet main battle tank has appeared which has been designated as the T-72.<sup>108</sup> Fielded in 1974, the new tank is a radical change from "traditional" Soviet design. There are many evident changes from the T-62, both visually and mechanically. The Soviets have abandoned the long favored Christie suspension system going to the small multiple wheel/return roller design used by many of the tanks of the West. The T-72 also uses rubber treads for the first time in any Soviet AFV. The vehicle is manned by a crew of three (no loader) and has a weight of only 38 tons and also has a new engine and transmission and a redesigned sloping hull for increased ballistic protection. The turret is elliptical with a flat top and the vehicle still maintains a low silhouette

with a height of only about 7.5 feet. The armament is still the stabilized 115mm smoothbore gun (also reported as a 125mm gun) and apparently there is an automatic loader and an improved cartridge ejection system. The 115mm gun appears to be the more logical choice due to the standardization of ammunition. Additionally, it is believed that there is a laser range finder and a ballistic computer on board much like on our own M-60A2.<sup>109</sup> The vehicle is also estimated to have approximately 5-9 inches of overall armor protection, possibly an advanced armor of some type, like Chobham armor, which has a vastly superior protection to weight ratio over standard armor.<sup>110</sup>

The T-72 has already entered series production with an estimated 800 such tanks now with front line troops in the Group of Soviet Forces/Germany.<sup>111</sup> however complete information on the vehicle is still lacking.

The evolution of Soviet armored vehicles since World War II has been one characterized by mass production standards and advanced technology culminating most recently in the T-72. We have seen that since World War II the machines are more sophisticated incorporating stabilized main guns, better sights and searchlights (both white and infra-red), and the armament is adequate for the role that the tank has to carry out. The tanks themselves are as simple as possible and standardization is widely practiced. Crew comfort is negligible in terms of space and the machine is constructed with a minimum of unnecessary finish. Quite logically, the tank is regarded as an expendable weapon and the Soviets feel that there is no sense in wasting unnecessary time in a tank's construction by adding



on any frills. Silhouettes are low and armor is sloped at considerable angles, as in the elliptical turret, to obtain the maximum protection for the tank and its crew against hostile fire. Again, the thickness of armor, until recently at least, has been of secondary concern, with the safety and protection of the crew together with the ability of the machine to complete its task coming from one factor only--the armament of the tank and the skill with which it is handled by the crew. Throughout the entire evolution of their armored vehicles, the Soviets have rarely been under gunned.

The technological characteristics of their armored vehicles also blend in quite well with the small unit organizational structure and the doctrine of the Soviet armored forces. As we have seen, the doctrine of the high speed offensive together with the preponderance of forces employed by the Soviets is embodied in the concept of numerous, relatively interchangeable small units having the capability of being rapidly manipulated to suit any tactical situation or mission by virtue of the modular building block approach. By the same token, these small, powerful units are made possible not only by the general trend of minimal lower level logistics and service elements, such as supply and maintenance, but also through the presence of simple, reliable, and expendable armored vehicles.

Each area we have mentioned, e.g. doctrine, organization, and vehicle configuration, directly supports the other and each is in itself based upon the other. We have seen that the doctrine is made possible through the organizational structure of the units, considering both triangulation and the building

block approach. The organization of units, on the other hand, is made possible by virtue of the simplicity and reliability of the vehicles. Finally, the vehicles themselves have been specifically designed and produced to satisfy both the organizational as well as doctrinal requirements; simplicity on the one hand, backed by speed, firepower, and numerical superiority on the other.

Generally speaking, in terms of Soviet doctrine, organization and armored vehicles, you cannot have one without the other. The trends just mentioned above will undoubtedly continue so long as the Soviets regard the tank as the primary strength of the Ground Forces, and from all indications, it looks as if Soviet armor will have an ever increasing role in the battlefield of the future.

## CHAPTER III FOOTNOTES

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<sup>3</sup>Ibid., p. 114.

<sup>4</sup>Ibid., p. 117.

<sup>5</sup>The Defense Intelligence Agency, The Handbook on Soviet Armed Forces, DDB-2680-40-78 (n.p.: n.pub., 1978), p. 8-8.

<sup>6</sup>DA, FM 30-40, p. 4-9.

<sup>7</sup>John Erickson, Soviet-Warsaw Pact Force Levels, USSI Report 76-2, (Washington D. C.: United States Strategic Institute, 1976), p. 17.

<sup>8</sup>DIA, Handbook, p. 2-1.

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<sup>10</sup>Erickson, USSI Report 76-2, p. 50.

<sup>11</sup>DA, FM 30-40, p. 4-3.

<sup>12</sup>Erickson, USSI Report 76-2, p. 31.

<sup>13</sup>DIA, Handbook, p. 2-3

<sup>14</sup>Erickson, USSI Report 76-2, p. 31.

<sup>15</sup>DIA, Handbook, p. 8-13.

<sup>16</sup>Erickson, USSI Report 76-2, p. 31.

<sup>17</sup>Ibid.

<sup>18</sup>U. S. Army Intelligence Threat Analysis Detachment, Military Operations of the Soviet Army, Report 14-U-76, (Arlington, Virginia, 1976), p. 102.

<sup>19</sup>DIA, Handbook, p. 2-11.

<sup>20</sup>DA, FM 30-40, p. 4-5.

<sup>21</sup>DIA, Handbook, p. 8-1.

<sup>22</sup>Ibid., p. 8-13.



<sup>23</sup>Army General I. G. Pavlovskiy, "In the Battles for the Motherland," Izvestiya, 13 March, 1975, p. 5.; Trans. FBIS No. 54, 19 March, 1975, p. V5.

<sup>24</sup>DIA, Handbook, p. 1-1.

<sup>25</sup>Ibid., p. 8-3.

<sup>26</sup>Lomov, Military Affairs, p. 117.

<sup>27</sup>Erickson, USSI Report 76-2, p. 31.

<sup>28</sup>DIA, Handbook, p. 8-13.

<sup>29</sup>DA, FM 30-40, p. 4-6.

<sup>30</sup>U. S. Army Armor School, ST 30-40-1, The Threat, (Ft. Knox, Kentucky, 1975), p. 1-8.

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<sup>32</sup>DA, FM 30-40, p. 4-6.

<sup>33</sup>Erickson, USSI Report 76-2, p. 31.

<sup>34</sup>DIA, Handbook, p. 8-4.

<sup>35</sup>USAITAD, 14-U-76, p. 79.

<sup>36</sup>DIA, Handbook, p. 8-5.

<sup>37</sup>Ibid.

<sup>38</sup>USAITAD, 14-U-76, p. 90.

<sup>39</sup>Ibid., p. 98.

<sup>40</sup>Erickson, USSI Report 76-2, p. 31.

<sup>41</sup>DIA, Handbook, p. 8-13.

<sup>42</sup>Ibid.

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<sup>44</sup>Erickson, USSI Report 76-2, p. 32.

<sup>45</sup>DA, FM 30-40, p. 4-9.

<sup>46</sup>Erickson, USSI Report 76-2, p. 40.

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- <sup>48</sup>Erickson, USSI Report 76-2, p. 40.
- <sup>49</sup>Armor School, Reference Data, p. 119.
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- <sup>51</sup>Armor School, Reference Data, p. 119.
- <sup>52</sup>Erickson, USSI Report 76-2, p. 40.
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- <sup>56</sup>Armor School, Reference Data, p. 119.
- <sup>57</sup>DIA, Handbook, p. 8-13.
- <sup>58</sup>Armor School, The Threat, p. 1-3.
- <sup>59</sup>DIA, Handbook, p. 8-10.
- <sup>60</sup>The Defense Intelligence Agency, Soviet Tank Company Tactics, DDI-1120-129-76, (n.p.: n.pub., 1976), p. 11.
- <sup>61</sup>DA, FM 30-40, p. 6-105.
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- <sup>63</sup>Ibid., p. 1-6.
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<sup>73</sup>Ibid., p. 60.

<sup>74</sup>R. M. Ogorkiewicz, "Soviet Armor," Armor (January-February, 1961), p. 30.

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<sup>86</sup>Armor School, Soviet Weapons, p. 5-9.

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<sup>88</sup>Ibid., p. 5-1.

<sup>89</sup>Erickson, USSI Report 76-2, p. 35.

<sup>90</sup>Armor School, Soviet Weapons, p. 5-1.

<sup>91</sup>Gratzl, "T-64," p. 25.

<sup>92</sup>Ibid..

<sup>93</sup>Ibid.

<sup>94</sup>Armor School, Soviet Weapons, p. 5-2.



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- <sup>96</sup>The Royal Armoured Corps Tank Museum, USSR, p. 30.
- <sup>97</sup>Brereton, Russian Tanks, p. 66.
- <sup>98</sup>Erickson, USSI Report 76-2, pp. 34-35.
- <sup>99</sup>*Ibid.*, p. 34.
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- <sup>104</sup>Brereton, Russian Tanks, p. 9.
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## CHAPTER IV

### PERSONNEL AND TRAINING

The superior number of tanks in the Soviet inventory creates an overwhelming sense of numerical inferiority in the West. It is necessary, however, to realize that a large amount of sophisticated military hardware is only as effective as those crew members who man them.

The purpose of this chapter will be to examine both the personnel of the Soviet armed forces as well as the training that they receive, specifically orienting the discussion towards the tank forces. I have divided the chapter into two parts, each dealing with one of the above two topics respectively. Part one concerning personnel will be further subdivided into four sections. The first section will give a general overall view of the Soviet military manpower and its strength in order to set a perspective for the rest of the discussion. The second section will examine the conscription system and also the recruitment of officers. The third section will be concerned with the reserve troops and will give a brief picture of their role in the system and the last section will examine some of the inherent personality traits, strengths and weaknesses of the Soviet soldier.

The second part of the chapter will be concerned with the training of the Soviet soldier, primarily oriented towards

the tanker. Divided into three sections, the first section will serve to give a brief introduction to Soviet training doctrine and will discuss the pre-military training given to the soldier. The second section will discuss post induction training of the soldier and will examine the role of military schools, specifically the officer academies. The third section will deal with unit training and will be primarily concerned with tank unit training. This section will also incorporate into it both strengths and deficiencies that are evident in the Soviet training program.

### Personnel

#### Manpower

In terms of numbers of men under arms, backed in turn by a massive reserve, the Soviet military establishment is currently the largest in the world, a reflection of both the traditional Russian predilection with numbers and also the persistent pursuit of the concept of a nation-in-arms, when virtually all individuals have been trained in the armed forces and are subject to active duty recall. At present the active strength of the Soviet armed forces amounts to about 4,200,000 men.<sup>1</sup> This figure takes into account not only the five separate components that we examined in the last chapter, but also the Border Guards (under the Committee of State Security, e.g. KGB) and the Internal Security Troops (under the Ministry of Internal Affairs, e.g. MVD). These last two components are included because Soviet draft-age youth enter them as well as the army and the navy.<sup>2</sup> Additionally, the



immediate reserve strength, which includes those individuals who have completed at least twelve months service in the last five years, is currently at about 5,700,000 men,<sup>3</sup> and it is estimated that in any recent five year period around 3,500,000 Soviets complete their military training.<sup>4</sup> Thus, under a system where reserve obligations for non-commissioned officers run to age fifty and for officers to age sixty-five, the reserve capability runs into literally the tens of millions.<sup>5</sup>

Whether constituting a militia or a regular standing army, the Soviet forces have traditionally been a conscript rather than a professional, or volunteer army. An aversion towards a professional army is quite understandable in a revolutionary state such as in the Soviet Union, however professionalism, at least within the army, is encouraged on an increasing basis. Currently the ratio of conscript to professional officers and non-commissioned officers is 65 percent to 35 percent,<sup>6</sup> however professional officers make up almost two-thirds of the latter percentage, or about 20 percent of all military personnel.<sup>7</sup>

Mere numbers, however, are meaningless without an understanding of the reasons behind them. In line with this, a look at the machinery behind this vast gathering of manpower is perhaps in order.

#### Conscription and Officer Recruitment

The Soviet military system is based on compulsory service; that is, the obligation of each citizen of the Soviet Union to undergo a period of military service. Under the

1967 Law of Universal Military Service all able-bodied men are subject to military service on their eighteenth birthday.<sup>8</sup> Women may also be subject to call if they have any medical or other specialized training.<sup>9</sup> The Law provides that men going into the army or other land based units serve two years and those going into the navy or the maritime border guards serve three years. Inductees with a higher level of education serve only one year.<sup>10</sup> Upon leaving military service, all men, except officers, remain in the reserves until age fifty and women remain until age forty.<sup>11</sup> Officers remain in the reserves beyond age fifty with the limit being sixty-five years. The higher rank one has the longer one stays until retirement.<sup>12</sup>

During February and March of the year in which they reach the age of seventeen years young Soviet men register for the draft with their local military commissariat. Each is given a physical and is interviewed as to his background, education, and attitudes and preferences towards the military. Each young man then receives a registration booklet (much like our draft card) as proof of registration which he must keep with him at all times. Registration, however, does not automatically mean that an individual will be inducted into active service. Normally only about one-half of the yearly census of eighteen year olds are inducted, or about 1.3 million a year,<sup>13</sup> with the rest receiving deferments. Deferments will be discussed shortly.

Twice each year, during May and June (at the end of spring planting season) and November and December (at the

end of fall harvesting) male youths who have reached their eighteenth birthday are called to active duty.<sup>14</sup> Also, any older men up to twenty-seven years whose deferments have expired are also called up. The first day of active duty is 1 July for those in the earlier notification period, and 1 January for those in the second period. Partly based upon one's performance, one's specialty learned in training courses conducted by DOSAAF (pre-military training to be discussed a bit later), or by other abilities, the individual is assigned by fixed quotas to the various branches, arms and services of the component services. Usually the higher level of education a man has, the more technical a branch he will be assigned to. Specific abilities looked for in future tank men are mechanical or automotive training, an ability to handle technical equipment, and a general height restriction of 5'6" or less,<sup>15</sup> logically due to the extremely cramped crew compartments of their tanks.

As mentioned, not everyone is subject to active duty, at least not immediately. There are three general categories of deferments authorized under the 1967 Law--family, education, and physical.<sup>16</sup> If an individual must support or care for his family, e.g. the dependency of disabled parents or of the wife and children of the draftee, then he may be deferred up to the age of twenty-seven years. If still authorized deferment at that time he will then be automatically put in the reserves.

Educational deferments are given to full-time students at universities, high schools (up to age twenty), technical



institutions (until graduation) as well as students studying in reserve officer training programs at technical institutions. Here again, twenty-seven years of age is the limit.

The last category is for physical reasons where an illness is deferred for one year and other reasons, e.g. a physical handicap, for three years. Upon review the individual is either put on active duty, placed in the reserves, or declared unfit and exempted from military service.

Officers of the Soviet armed forces enter the service from a variety of sources and programs. As previously mentioned, about 20 percent of the army personnel are officers, and the younger officers, e.g. thirty years old and less, make up 65 percent of all officers at regimental level and below.<sup>17</sup>

The largest number of officers are commissioned from the military commissioning schools or colleges, of which there are 143, each with an average enrollment of about one thousand cadets.<sup>18</sup> Requirements are quite stringent for admission, including successful completion of one's secondary schooling, as well as being proficient in Russian language and literature. This particular requirement seems to discriminate against soldiers of non-Russian nationalities considering that there are numerous separate nationalities within the Soviet borders. Another recent factor concerning admission is that it is not so much based on one's qualifying examination marks as it is upon the "points" earned by the entire previous record of the individual.<sup>19</sup> According to Goldhamer, this change seems to be related to an interest in

exercising greater political control over the selection of students for military schools. More on military academies will be discussed shortly.

Another means of acquiring officers is through a reserve officer training program offered in their universities, much like our own program. Given training in military subjects along with their normal curriculum over the duration of their schooling, an individual graduates with a reserve commission as opposed to the regular commission given from a military college. Rarely are reserve officers in this category called for active duty, however they are liable for call-up until age thirty and may be required to serve for a period of up to three years. Even so, periodic call-ups for military exercises are not uncommon.<sup>20</sup>

A third source for officers in the Soviet armed forces is from the ranks. Upon completion of one's active duty service, conscripts who have a secondary or higher education can be commissioned as a lieutenant in the reserves by successfully passing a commissioning examination. Both warrant officers and non-commissioned officers are also permitted to apply for commissions through these examinations. These two areas of rank perhaps bear a brief explanation.

Both the warrant officer (Praporshchik) and the non-commissioned officer originate from the ranks of the conscripts with the warrant basically being one notch higher than the non-commissioned officer. Each rank is voluntarily applied for and is awarded based on political reliability and one's military record. A warrant's initial term of

of service is for five years while a non-commissioned officer can re-enlist (extend his service) for periods of two, four, or six years.<sup>21</sup> One differing factor for the latter group is that a non-commissioned officer makes his rank in two ways. He is either identified immediately after his induction as an outstanding conscript based on his records and tests, and is sent to six months of NCO academy training prior to being assigned to a unit, or else following completion of one's active duty an individual can apply for an extension of service as a non-commissioned officer. Warrant officers, on the other hand, are strictly extended service personnel, sometimes non-commissioned officers themselves, who receive a higher caliber of schooling for their rank. Both of these "career conscripts" make up about 15 percent of the total personnel in the Soviet armed forces.<sup>22</sup>

### Reserves

All former service personnel released from active duty for other than retirement or disability are transferred to the reserves and, as previously mentioned, this figure probably runs into the tens of millions. Unlike the reserve units found in our own system, however, the Soviet reserve system has no organized units as such, undoubtedly by virtue of its size. This is not to give the impression, however, that Soviet reserves are unorganized or that no reserve training is carried on--quite to the contrary. The Soviet reserve system is structured so as to administratively control each individual wherever he may be to insure he does not evade his



reserve responsibilities. One is rarely able to disappear completely into civilian society upon discharge. An example of the reason is the military reservist booklets issued to all reservists. These booklets are necessary for residence permits when one changes his locale or address and for work permits when changing jobs.<sup>23</sup>

Mobilization of the reserves will be quite an undertaking when and if it happens. It is not my intention to go into a detailed examination of mobilization, however it should be briefly discussed. At the initiation of mobilization all active duty troops will be retained until further notice and all reservists subject to re-call will be issued mobilization orders indicating where and when to report. Reservists called to active duty receive assignments on the basis of their occupational specialty and the quotas required to fill various units. Not everyone is mobilized at once, however, and the operation is divided into two phases. Fully trained troops are called up first to bring the active duty units up to strength with the second phase concerned primarily with the induction, assembly and training of lesser trained reservists for further expansion and replacement of the forces. Additionally, state run "commercial" organizations such as Aeroflot (with its vast amount of aircraft), the Soviet Mercantile Marine (with its extensive fishing fleets)<sup>24</sup> and the trucking industries would be mobilized "en masse", manned by their own people who are virtually all reservists.

### Personality Traits, Strengths and Weaknesses

Throughout much of the current literature published by the Soviets concerning their soldiers, descriptive terms keep reoccurring such as "ideologically conditioned;" "iron discipline," "self reliance and initiative,"<sup>25</sup> "combat maturity" and "the ability to act decisively under the most difficult conditions."<sup>26</sup> Some of these terms are quite probably very true and yet some are contradictory to what is commonly known about the Soviet system. Though my discussion will quite naturally have a "Western" point of view, the personality traits, strengths and weaknesses of the Soviet soldier bear examination.

The Soviet soldier is a product of one of the most regimented societies in history and from childhood he is made accustomed to everything going according to plan. As long as things go as they are planned, there is no problem; the political socialization so commonplace within the society drives into the individual the characteristics of conformity and creates a sort of dogmatic approach towards life and one's work. The inflexibility of today's Soviet soldier is reinforced through the "iron discipline" each conscript is initiated to in the military service, and he is confronted with such slogans as "an order is sacred . . ." or "an order under any circumstances must be carried out . . ."<sup>27</sup> No latitude is given and the authorities try to make the soldier obey orders without question, a form of blind obedience. Thus, the Soviet soldier, in a rapidly changing situation may tend to follow the last order given regardless of how

inappropriate or illogical it might be. This drive to persist on a course of action despite the objective conditions appears to be a major weakness of the Soviet soldier.<sup>28</sup> Conversely, this weakness may be overshadowed by the soldier's obedience, which is one of his major strengths.

A major objective of Soviet military training, specifically in the case of the officers, is the development of initiative and creativity. As indicated in chapter two, in nuclear war

. . . a commander cannot count on receiving exhaustive instructions from a senior commander at all stages of the battle. In complicated and tense situations, under conditions created by unexpected and sharp changes in the situation, the (junior) commander will have to make responsible decisions<sup>29</sup> on the basis of (his) overall concept of action.

While this is an acknowledged probability, the Soviet system, at least presently, offers little chance for initiative to come forth. While publically, at least, the drive is on to "encourage more initiative"<sup>30</sup> among both soldiers and officers, the fact still remains that the constant stress on discipline and strict compliance with orders overshadows this move. Over-supervision by superiors is the order of the day in that the soldier is the product of a society which places great reliance on directions "from above." Additionally, the training one receives from childhood through political socialization and collectivization tends to contradict the recent move towards encouraging initiative. While on the one hand an individual is taught to be one of the crowd and to conform to the others, on the other hand he is basically being pushed towards something inherently alien to his



societal upbringing. This naturally has a stifling effect towards innovation and initiative at the intermediate (younger officers) and lower levels (conscripts), both due to fear of reprisal and to confusion, if for nothing else. Stemming from this, it also appears that very little faith is placed in subordinates, possibly by virtue of the fact that the leader is ultimately responsible for the actions of his men. This may be evidenced by the detailed and exacting instructions given for almost any situation, leaving little room for individual initiative. The reasoning behind this action is quite probably to decrease the chances of the subordinate making major errors for which the commander or leader will be held responsible.<sup>31</sup> While there seems to be some progress being made towards development of initiative in the Soviet soldier, it seems very apparent that it will take quite some time for them to fully realize their goal. Steps are being taken, however, in that lack of initiative as well as taking the initiative is given much emphasis in Soviet military publications such as Krasnaya Zvezda.<sup>32</sup>

The political indoctrination process, although boring at times, is effective. Political control is evident at all levels of the military and plays a major role in the decision making process as well as in the day to day life of the soldier. Having been raised under political socialization, the conscript is generally concerned with his fellow soldiers and pays attention to the social pressures within his unit. The USSR has subjected the majority of its citizens to indoctrination for their entire lives, and military personnel

because they are a captive audience, are exposed to it constantly. Although certain aspects are sometimes counter-productive, such as the incessant meetings, endless discussions of political writings of Lenin and others, this political training is none-the-less effective, although much of it appears to be taken for granted.

Propaganda and indoctrination, both in and out of the military, are established fixtures of the Soviet society as a whole, and they have made their mark on the military. Presently about 20 percent of the total population belong to the Communist Party or the Komsomol. In contrast, over 80 percent of all military personnel and 90 percent of the officer corps are Party or Komsomol members.<sup>33</sup>

By virtue of his upbringing the Soviet soldier is a relatively unsophisticated and simple man. He is one who accepts things as they are and who rarely challenges his superiors. Soviet military life is simple and uncomplicated and as long as one does his job well, one gets along. The Soviet High Command reinforces this attitude of a simple and unsophisticated soldier through their training. It is designed to impart minimal knowledge to the soldier and to thus force him to be a member of the team and to strip him of his individuality. Molded through this process, the conscript is relatively unambitious and used to comparatively fewer comforts in life. He is an uncomplaining soldier and one accustomed to living a spartan existence (by our standards). The end result is that he appears to be a good line soldier, one who obeys without question, and one who is conditioned

to live under the relatively primitive conditions of war. Ironically, however, the Soviet's greatest strength (obedience) is perhaps his greatest weakness (initiative).

### Training

#### Premilitary Training

Military training in the Soviet Union consists of civilian premilitary training, in-service training, and reserve training.<sup>34</sup> The premilitary training concept is not new, however with the initiation of the 1967 Law of Universal Military Service greater emphasis has been given to this area than before. The general reason for this was that with reducing an individual's active duty time in service from three years to two years, an inherent problem was the adverse effect on combat readiness due to a reduction in training time. It was, and is, felt that this preinduction training would offset the loss of in-service training time by making the transition from civilian life to military life easier and would help the new soldiers master modern military equipment more quickly when they were drafted.

While military training is prevalent from the very early years in a child's training, e.g. Young Pioneers, and Komsomol summer camps, the "official" preinduction training is given during the last two years of high school and is compulsory for all young men between the ages of sixteen and eighteen.<sup>35</sup> Training is additionally given to those not yet in the military who are deferred for some reason, but who are in professional trade schools, specialized secondary



schools, or for those who have left school and are working in factories, offices, or farms. Generally run by the All-Union Voluntary Society for Assistance to the Army, Air Force, and Navy (DOSAAF) under the auspices of the Ministry of Defense, the training received varies from military oriented sports programs to training specifically oriented for a particular speciality.<sup>36</sup>

Generally speaking the premilitary training is the "pre-1967" basic training that inductees used to get once they were drafted. The standard program is based around a 140 hour block of instruction oriented towards familiarization with military organization and regulations, small arms use, and civil defense techniques. Normally students spend about two hours a week over the two school years on these topics in addition to their normal course load. Workers, on the other hand, attend three week-long full time sessions at training centers.<sup>37</sup> In addition to this formal classroom training, a system of camps has been established run by DOSAAF and the Komsomol where trainees attend field exercises varying in duration from five to fifteen days, putting into practical application what they have learned in class.<sup>38</sup> Attendance is supposedly voluntary, and the camps are run like military garrisons with formations, reveille, guards mount, physical training and weapons firing.

In addition to the standard premilitary training just discussed, DOSAAF is also responsible for the specialist training offered in the second year of the basic course. This is again "voluntary" on the part of the individual and not

everyone participates, but the fact is that quotas are assigned to the local military commissariats and these must be filled, normally by individuals who have shown a preference for a particular specialty. There are over 2,000 military specialties in the Soviet armed forces, each with its own prerequisites and training.<sup>39</sup> The program is ten months long and is autonomous from the standard program in that it orients an individual both theoretically and practically towards his given specialty. Courses in military-technical areas such as automotive repair, truck driving, communications, and piloting of aircraft are offered, to name a few.<sup>40</sup> Within the standard program mentioned earlier, about one-third of the time is devoted towards a "mass assigned" specialty for the typical individual, but it is not as comprehensive as the specialist training mentioned here.

During preinduction training no formal political training as such is given, at least not specifically within the program. The responsibility for this lies with the schools, factories and local Party organizations, although inevitably the program itself has a strong latent political message.<sup>41</sup>

Considering the vast scope of this training program, problems do occur. With over 315,000 training sites to man and run,<sup>42</sup> invariably some will be better organized than others, especially those in more urbanized areas. Shortages in trained personnel and insufficient supplies of necessary equipment are to be expected with many of the cadre being usually older reserve officers and non-commissioned officers. Even with these problems, however, the preinduction training

program appears to work. It does provide preliminary military training to the majority of draft age young people going on to active duty as well as to the roughly 50 percent of Soviet youth that are not called.<sup>43</sup>

#### Post Induction Training and Schools

The training that one receives following induction may be arbitrarily divided into individual and unit training. Twice a year, as previously mentioned, draftees are called up for active duty, but having been drafted does not mean that an individual is "officially" in the army yet. Newly inducted soldiers are transported to camps which equate roughly to the reception centers of our own army. Here the recruits are given a physical examination, issued clothing and are subjected to about four weeks of intensive individual basic military training which augments that which was learned in the preinduction training. The combination of these two periods could be loosely compared to our own basic training. The recruit learns to drill, march and basically how to integrate himself into a military unit. At the end of the period of training he is sworn into the armed forces in an impressive ceremony with each soldier required to read the Oath of Allegiance aloud and sign it in front of his peers and superiors.<sup>44</sup> Only after a soldier has read the Oath is he "officially" in the military service. (See Appendix A)

Upon completion of the initial four weeks of instruction the recruit is assigned to an operational unit. Certain conscripts, however, will be selected to attend advanced



specialist training based on their preinduction training record. Additionally, certain outstanding conscripts will be selected to proceed directly to a non-commissioned officer's school for a period of several weeks to a year. Most non-commissioned officer training appears to last about six months. These schools are operated by the specific components and arms to which the conscript is assigned, e.g. the tank forces, with the subject matter of the courses varying with the pertinent specialty, but concentrating primarily on military subjects and technical areas. Conscript tank commanders, gunners and driver/mechanics complete a period of four to six months instruction in specialist training prior to joining their units.<sup>45</sup>

Prior to moving on to our discussion of unit training, I think it may be best at this time to briefly discuss the initial training and schooling of the young officer of the Soviet armed forces. With roughly 143 military academies or colleges the Soviet Union possesses the world's most extensive network of officer commissioning programs. Having discussed the admission requirements earlier, it should be evident that the military colleges are the backbone of the Soviet commissioning program with the total output of all of its officer candidate establishments at approximately 60,000 officers annually.<sup>46</sup> Military schools range from three to five years in length and graduates of both types of colleges (technical and higher colleges) are commissioned as lieutenants in their respective branch. Unlike our army, Soviet officers are commissioned "for the duration" and normally are

not released from active duty until the minimum age of forty years.

As in our own academies, strict military discipline and bearing is enforced at all times, which, in addition to the educational requirements, serves not only to train the young cadet officers, but also to weed out the undesirables.<sup>47</sup> Curriculum in these academies varies depending on the branch towards which the school is oriented. Generally 60 percent of their curriculum is devoted to specialized military subjects such as regulations, branch tactics, weapons and equipment<sup>48</sup> and about 30 percent is devoted to academic subjects. The remaining 10 percent is dedicated to political studies.<sup>49</sup> Cadets are also given "substantial experience" by what might be called hands-on-training through "group exercises, seminars, and participation in troop exercises at various types of tank practice ranges, airbases, motor vehicle ranges and water practice ranges."<sup>50</sup> For one and a half months each year, students at these institutions train in the field with an appropriate branch unit.

The goal of the academies is to give the cadets not only technical and scientific training, but also a "solid knowledge on the fundamentals of organizing battles and operations as well as controlling them."<sup>51</sup> As an example of an armor oriented academy, such as in the Ul'yanovskoye Guards Higher Tank Command School, after four years of diversified military training, "all of the young men are awarded the rank of lieutenant and a diploma of an armored transporter (tank), motor vehicle, and tractor operating engineer."<sup>52</sup>

In conjunction with these officer's schools, warrant officers and warrant officer candidates also attend various courses at the same institutions. As discussed earlier, warrant officer candidates must attend a six to nine month course to become a warrant officer once accepted into the program. Having successfully completed this course they may be directly commissioned to lieutenant by passing the commissioning examination or they can be directly commissioned after ten years of successful active service.<sup>53</sup>

#### Unit Training

Once a conscript reaches his unit of assignment, most of his further military training is obtained under the supervision of the officers, warrant officers and non-commissioned officers of the organization. Unlike our system, the Soviet soldier remains with his unit until discharged two (or three) years later, thus contributing to a fairly stable progression of training.

Unit training activities are incorporated into a yearly training program which is divided into a winter (1 December to 1 May) and a summer (2 May to 30 November) period.<sup>54</sup> Within these training periods different levels of instruction are taught simultaneously so as to incorporate both the recruit as well as the more experienced senior serviceman into meaningful instruction. Both winter and summer periods are basically the same since there is an ever revolving cycle of soldiers entering and leaving active service every six months.

Small unit training receives the greatest emphasis by



the Soviets, usually oriented from squad to platoon level. Soviet training is generally simple, repetitious, and as realistic as possible. Repetition in training, be it at an individual or unit level, has its positive and negative aspects. While it stresses the term "practice makes perfect" to its fullest limit, to insure that each soldier or unit can perform their combat task automatically and with high confidence, it also drastically hinders the initiative and decisiveness of the soldier. Additionally, a soldier is normally taught only what he needs to know in order to accomplish a specific task or mission, and nothing else. Although there are frequent public references to cross training, such as between a gunner or loader in a tank, training in only one skill appears to be the rule.<sup>55</sup> This can have drastic effects on a "team" such as a tank crew where the loss of one man could very well negate the combat effectiveness of the vehicle and its weapon system. In unit training the same criteria applies. In a tank platoon or company, for instance, most training is merely a repetition of standard drills and formations,<sup>56</sup> with very little opportunity for junior officers and tank commanders to use their initiative. Concepts such as our "overwatch" movements, which utilizes individual movement and terrain for protection and which stresses initiative on the part of every tank commander and crewman are virtually nonexistent.

The realism practiced in training is a definite asset and is very evident in the publicized maneuvers and exercises of recent years. As in our own doctrine, training activities

conducted in near realistic combat conditions serves to psychologically "steel" the Soviet soldier to enable him to become stable and confident in his ability to withstand stress and overcome fear. As an example, live fire and aerial bombing, as well as live chemical and radioactive agents are used (within reason) by the Soviets during training operations.<sup>57</sup> Soldiers are required to wear protective clothing and masks for up to several days at a time and to practice decontamination techniques in actual contaminated situations. Additionally, there is no "inclement weather schedule" in the Soviet army--no matter what the weather is at the time, scheduled training takes place.<sup>58</sup> Little concern is given for a soldier's physical comfort since he is being prepared to fight at any time and under any conditions.

Approximately 75 percent of a soldier's training time is in the field, irregardless of the subject, be it political training or tactics. In conjunction with this field training, 30 percent of all training, at least for a tank company, is done under night conditions.<sup>59</sup> As mentioned in chapter two, night operations are treated as a normal operation by the Soviets and not as something out of the ordinary. Physical conditioning is also very much in evidence through not only field training, but also through organized sports and calisthenics. Physical conditioning is emphasized through the training day with even tankers making forced marches with full gear.<sup>60</sup>

Quite contrary to the realism evident in much of the training of the Soviet armed forces, equipment conservation

is widely practised with only perhaps 20 percent of actual actual equipment normally being used in a given divisional field exercise.<sup>61</sup> The majority of this conservation is practiced at the lower unit levels, however, specifically orienting towards individual training. As an example, training in a tank company concentrates on firing, driving and rapidly shifting combat formations. As mentioned earlier, most training consists of repetitious drills done over and over in order to make one's actions and reactions in a given situation automatic. To conserve equipment "for combat", however, tank companies normally use only one or two tanks (out of ten or thirteen tanks) for training.<sup>62</sup> The remaining tanks are kept in storage and are periodically rotated with training tanks or for large scale exercises, as mentioned. It is logically felt that the training of crews whose tanks are in storage is probably not as effective in comparison to those crews having their own tanks being utilized as training tanks.

Because of this "equipment conservation the Soviets have developed and place great reliance upon a myriad number of tactical simulators in order to more adequately train their personnel. As an example, the majority of training time in a tank company is spent using driving simulators and sub-caliber devices to improve maneuvering and gunnery techniques.<sup>63</sup> In tank gunnery only the machine guns and the 23mm subcaliber device for the main gun are used for qualification.<sup>64</sup> The tank commander (not the gunner) normally fires only three rounds of armor piercing main gun ammunition each year for



familiarization.<sup>65</sup> It would appear that a great deal of faith is being placed on the simulators in lieu of working with the actual equipment, irregardless of the conservation of money and equipment achieved, however the Soviets feel that their training goals are being accomplished. Additionally, tactically complex operations, by virtue of this training concept, may not be carried out with full success, but the type of operation which involves standard drills of smaller units and less complex operations will probably be successfully accomplished. The massive forces employed will probably also serve to alleviate any shortcomings in this area of concern.

Political training is an area that has ramifications throughout the Soviet military. From 10 to 15 percent of the military training day is devoted to political indoctrination either through lectures or through Party organizational meetings. All units of company size or larger have a deputy commander for political affairs (Zampolit) who is responsible for the political training of the units.<sup>66</sup> He is not limited to purely political affairs, but is also the unit executive officer, training officer, and holds other additional duties as well. Competence in military skills and progress in military training are associated with effectiveness in political indoctrination and, as stated by Colonel General M. Tankayev, "the Soviet officer is above all a political indoctrinator."<sup>67</sup> The soldier's whole purpose for being is centered around the Party, and political awareness and military achievements are considered one and the same; the latter cannot be had without the former. All failures or successes are defined in terms of

how politically sound one's training is and to a great extent the pertinent decisions of a unit are not made by military councils but rather at meetings of the "Party committee" to which military commanders are invited.<sup>68</sup> That the Party leads the army in all spheres of military affairs is a very important theme of political indoctrination in the Soviet forces.<sup>69</sup>

In line with political indoctrination, Socialist competition has become an effective means for improving the overall capabilities and accomplishments of both individuals and units.<sup>70</sup> Utilized extensively, it basically consists of an individual or unit pledging to exceed a certain norm or level of expertise over a given period, usually to the "Glory of the Sixtieth Anniversary of the Revolution" or some like cause.<sup>71</sup> This can be done in such areas as using training time effectively, mastering the operation and maintenance of combat equipment, training outstanding and first class specialists, and even keeping up one's appearance.<sup>72</sup> Like any competitive program it does serve to give impetus towards one's work, to do the best one can. By the same token it many times has the additional negative characteristic of causing shortcuts, padded scores, cheating, and a general paranoia towards tests and inspections.<sup>73</sup> Units are rated on the basis of a four point system based on an "excellent, good, satisfactory, or poor" score, with basically anything less than excellent in the Soviet's eyes considered as a failure. This is in addition to the stress already placed on individuals and units by virtue of the overall Socialist system. Socialist competition, nevertheless, is an important

part of the military/political process of the Soviet forces, and it does serve to keep most units at a higher degree of preparedness than they might normally be.

As we have seen in this discussion of personnel and training of the Soviet armed forces, there is much more to their forces than mere numbers indicate. The Soviets have the strong conviction that the limits of a man's potential is never reached, and that the goals of accomplishment can and must always be pushed a little further. These convictions are evident not only in their training doctrine, but in their tactical doctrine as well, and in many ways become one mode of thought. There are, in effect, only two states of being for a Soviet military man--either he is fighting or he is training, and in the Soviet's mind these concepts are one and the same.



## CHAPTER IV FOOTNOTES

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<sup>2</sup>Herbert Goldhamer, The Soviet Soldier, (New York: Crane, Russak and Company, Inc., 1975), p. 6.

<sup>3</sup>Erickson, USSSI Report 76-2, p. 17.

<sup>4</sup>The Defense Intelligence Agency, The Handbook on Soviet Armed Forces, DDB-2680-40-78 (n.p.: n.pub., 1978), p. 5-11.

<sup>5</sup>Ibid., p. 5-12.

<sup>6</sup>Erickson, USSSI Report 76-2, p. 19.

<sup>7</sup>Goldhamer, The Soviet Soldier, p. 4.

<sup>8</sup>Ibid.

<sup>9</sup>DIA, Handbook, p. 5-1.

<sup>10</sup>Goldhamer, The Soviet Soldier, p. 4.

<sup>11</sup>The Department of the Army, FM 30-40, Handbook of the Soviet Ground Forces, (n.p.: n.pub., 1975), p. 3-5.

<sup>12</sup>Goldhamer, The Soviet Soldier, p. 8.

<sup>13</sup>Ibid., p. 23.

<sup>14</sup>Ibid., pp. 4-5

<sup>15</sup>COL Frederick C. Turner, Lecture on Soviet Armed Forces, Ft. Benning, Georgia, 12 January, 1977.

<sup>16</sup>DIA, Handbook, p. 5-5.

<sup>17</sup>I. A. Kamkov and V. M. Konoplyanik, Military Academies and Schools, (Moscow, 1974), p. 60.; Excerpt Trans. JPRS No. 64916, 1974, p. 60.

<sup>18</sup>DIA, Handbook, p. 5-5.

<sup>19</sup>Goldhamer, The Soviet Soldier, p. 18.

<sup>20</sup>DIA, Handbook, p. 5-5.

<sup>21</sup>Goldhamer, The Soviet Soldier, p. 5-5.

- <sup>22</sup>Erickson, USSI Report 76-2, p. 19.
- <sup>23</sup>DIA, Handbook, p. 5-11.
- <sup>24</sup>Erickson, USSI Report 76-2, p. 17.
- <sup>25</sup>"Improve the Tactical Training of Future Officers," editorial, Krasnaya Zvezda, 25 March, 1975, p. 1.; Trans. JPRS No. 64631, 1975, p. 6.
- <sup>26</sup>Marshal of Armored Troops A. K. Babadzhanyan, Interview Concerning the Armored Force of the Homeland, Pravda, 12 September, 1971; Trans. JPRS No. 54363, 1971, p. 11.
- <sup>27</sup>DA, FM 30-40, p. 3-24.
- <sup>28</sup>Ibid.
- <sup>29</sup>Goldhamer, The Soviet Soldier, p. 97.; originally from Krasnaya Zvezda, 3 June, 1972, p. 1.
- <sup>30</sup>Marshal A. A. Grechko, The Armed Forces of the Soviet State, (Moscow, 1975), p. 315.; Trans. USAF.
- <sup>31</sup>MAJ Thomas C. Evans, Current Objectives and Deficiencies in the Training of the Soviet Tanker, unpublished thesis (The U. S. Army Institute for Advanced Russian and East European Studies, Garmisch, Germany: 1975), p. 11.
- <sup>32</sup>CPT M. Zieminysh, "Why Did the 'Enemy' Fail to Act?," Krasnaya Zvezda, 4 June, 1975, p. 1.; Trans. JPRS No. 65323, 1975, p. 4.
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- <sup>34</sup>DA, FM 30-40, p. 3-9.
- <sup>35</sup>Goldhamer, The Soviet Soldier, p. 39.
- <sup>36</sup>Ibid., p. 40.
- <sup>37</sup>DIA, Handbook, p. 6-2.
- <sup>38</sup>Goldhamer, The Soviet Soldier, p. 54.
- <sup>39</sup>Ibid., p. 94.
- <sup>40</sup>Ibid., p. 56.
- <sup>41</sup>Ibid., p. 53.
- <sup>42</sup>Ibid., p. 42.

- <sup>43</sup>Ibid., p. 66.
- <sup>44</sup>DA, FM 30-40, p. 3-15.
- <sup>45</sup>The Defense Intelligence Agency, Soviet Tank Company Tactics, DDI-1120-129-76, (n.p.: n.pub., 1976), p. 11.
- <sup>46</sup>DIA, Handbook, p. 6-4.
- <sup>47</sup>Kamkov, Military Academies, JPRS No. 64916, p. 74.
- <sup>48</sup>Ibid., p. 68.
- <sup>49</sup>DIA, Handbook, p. 6-5.
- <sup>50</sup>"... Training of Future Officers," Krasnaya Zvezda, JPRS No. 64631, p. 6.
- <sup>51</sup>Kamkov, Military Academies, JPRS No. 64916, p. 67.
- <sup>52</sup>Ibid., p. 70.
- <sup>53</sup>DIA, Handbook, p. 5-6.
- <sup>54</sup>Ibid., p. 6-8.
- <sup>55</sup>Babadzhanyan Interview, Pravda, JPRS No. 54363, p. 11.
- <sup>56</sup>"In Combat Formation--Toward High Frontiers," editorial, Kommunist Vooruzhennykh Sil, 19 September, 1977, p. 48.; Trans. JPRS No. 70046, 1977, p. 54.
- <sup>57</sup>Goldhamer, The Soviet Soldier, p. 112.
- <sup>58</sup>DA, FM 30-40, p. 3-21.
- <sup>59</sup>DIA, Company Tactics, p. 11.
- <sup>60</sup>CPT V. Vasil'kiv, "The Check Will Show. . .," Krasnaya Zvezda, 18 August, 1977, p. 1.; Trans. JPRS No. 69891, 1977, p. 92.
- <sup>61</sup>Erickson, USSI Report 76-2, p. 33.
- <sup>62</sup>DIA, Company Tactics, p. 11.
- <sup>63</sup>Engineer Major P. Dubovik, "A New Classroom Trainer," Znamenosets, 20 October, 1976, p. 18.; Trans. JPRS No. L/6875, 10 February, 1977, p. 5.
- <sup>64</sup>DIA, Company Tactics, p. 13.
- <sup>65</sup>Ibid.



<sup>66</sup>DA, FM 30-40, p. 3-23.

<sup>67</sup>Goldhamer, The Soviet Soldier, p. 206.

<sup>68</sup>LTC M. Kuz'nin, "Firing Training in the Center of Attention," Kommunist Vooruzhennykh Sil, 5 April, 1976, pp. 47-53.; Trans. JPRS No. L/6088, 16 June, 1976, p. 17.

<sup>69</sup>Goldhamer, The Soviet Soldier, p. 206.

<sup>70</sup>"In Combat Formation . . .," Kommunist Vooruzhennykh Sil, JPRS No. 70046, p. 50.

<sup>71</sup>Ibid., p. 49.

<sup>72</sup>Goldhamer, The Soviet Soldier, p. 117.

<sup>73</sup>Ibid., p. 122.

## CHAPTER V

### CONCLUSIONS

As we have seen in the preceding chapters there is a great deal more behind Soviet armored doctrine than merely the preponderance of vehicles employed, which is logically the most obvious characteristic facing the West. Having traced and examined the evolution of not only the doctrine, but of also the organization and vehicles, I believe it is fairly evident that each reinforces the function of the other, although it was not perhaps originally intended to be so.

One might arbitrarily say that the evolution of Soviet armored doctrine has passed through three general phases. In the first phase we saw that initially the tank was not accepted in its own right, but was rather forced to adapt to traditional strategies, due not only to the old school of thinking but also to the technological limitations of the times. With experience, however, it was soon evident that the roles would change. The second phase began just prior to World War II when military doctrine was drastically modified under the auspices of Marshal Tukhachevsky. A viable organization of units was effected and with a solid industrial base, production of armored vehicles and weapons was pushed to its fullest. At this point the roles had actually reversed and by now the doctrine was formulated around the armored vehicle,

being characterized by massive Blitzkrieg operations having as their nucleus massive armored formations with their inherent speed, mobility and firepower. These tactical concepts were employed to great advantage throughout the war and were maintained for several years thereafter.

What I consider to be the third phase of doctrinal evolution has its beginnings in the 1950's and is still in progress. Predominantly based around nuclear warfare, we have seen that this most recent period has been one characterized by radical doctrinal changes. We saw that under Khrushchev conventional doctrine, as had been practised under Stalin, was relegated to a poor second while nuclear war and the domination of the nuclear weapon system received primary emphasis. Reliance on this "ultimate" weapon and a subsequent severe reduction in the conventional forces was the order of the day. With the ouster of Khrushchev in 1964, however, we saw that a balance was effected between conventional and nuclear forces. The nuclear weapon system was realized not to be the ultimate weapon it was once thought to be, but only one factor, albeit perhaps the decisive factor, of future war. It was felt that conventional forces were in many ways more important in that they could seize certain objectives intact without resorting to nuclear destruction, or at any rate would be necessary to exploit nuclear attacks without causing the tremendous destruction and annihilation that would take place were nuclear weapons to be used exclusively.

Since the conception of this nuclear/conventional doctrine, the only real changes that have taken place have been



basically technological, e.g. bigger and better nuclear weapon systems and newer and more capable vehicles. Within the totally mechanized Ground Forces, as we have seen, the vehicles are now capable of operating relatively safely on the nuclear battlefield, engaging targets at much longer ranges with a higher degree of accuracy, and being much more mechanically and technically reliable overall. I believe that it is fairly obvious now that each major component of our discussion, the tactical doctrine and the tank forces, tends to reinforce the raison d'etre of the other, although one must not totally neglect the role of the other combat arms.

The primary purpose of this thesis has been to address the question of whether or not the doctrine and capabilities inherent to the Soviet tank forces are the best that the Soviets can muster, or if not, can they perhaps do better in some other way? I personally feel that with all things considered, e.g. the Soviet ideology, their predilection with numbers, their economy and their striving for a nation-in-arms, that their armored doctrine is not only adequate for their purpose, but is, for them, the best that they could possibly create.

The Soviet Union is a most formidable opponent. Its doctrine, as we have seen, is one based on mass, speed, and devastating firepower, both nuclear and conventional. While publically advocating only a defensive posture in order to protect its homeland, the doctrine and strategy, as we have seen, tends to be virtually offensive in nature. The concept of the offensive and its massive steamroller-like push

across Western Europe, incorporating not only vast numbers of armored vehicles and troops, but also backed by virtually millions of reserve troops lends credence to this doctrine. Vehicles and troops are considered as expendable, thus each is constructed or trained only sufficiently enough to perform its mission. The offense is all important with little or no emphasis given in their training or doctrine towards defense or retrograde operations. I do believe, however, that there are some serious problems inherent to their doctrine which bear discussion.

I agree that a nuclear/conventional balance is perhaps the most logical approach to a future war, and to that end I believe that they have quite adequately organized themselves to best make use of the mobility and speed of a future war, specifically in regards to their tactics, their smaller unit organization and their vast numbers of armored vehicles. I do not believe, however, that the Soviets have realistically taken into account the fact that the NATO forces, outnumbered as they are, are still a very formidable force with which they will have to contend.

Throughout the vast majority of their writings the Soviets have developed the scenario of their massive mechanized forces moving undaunted at a rate of some 60 miles a day across the whole of Western Europe, reaching the English Channel in about twelve to fourteen days. Their concept of a short war appears to me to be wishful thinking.

I sincerely believe that over the years the Soviets have become rather overconfident in their planned strategy in

Europe, perhaps due to listening to their own rhetoric for so long or perhaps due to their lack of combat experience since World War II other than through their own preplanned exercises in which they almost always seem to win. I'm not so presumptuous to say that their doctrine will positively not work, because the USSR is an extremely formidable opponent, and in actual practice their doctrine and strength might very well be successful. By the same token, however, there are quite a number of variables present that are not, publically at least, addressed by the Soviets.

Western Europe is one of the most densely populated areas of the world, and the tremendous amounts of refugees in the zone of action will undoubtedly cause considerable problems, not only for our own troops, but for the advancing Soviets as well. The mass confusion and chaotic conditions that will occur in a future war with reference to the millions of Western European civilians should be readily apparent. Additionally, I feel it would be safe to say that many civilians will quite possibly deliberately hinder the advance of the Soviets, either individually or through the activities of resistance movements or groups.

Terrain is another factor facing the Soviets. Except for a few obvious corridors such as the Northern Plains or the Fulda Gap, there are relatively few high speed axes of advance into the Western European countries. Except for these few identified avenues of approach the terrain is generally rugged and heavily wooded with many built-up areas throughout. In the dense forests nuclear weapons, friendly or enemy, would



cause tremendous fires and/or would create fantastic abatis which would almost totally block any approaching armored columns. The built-up areas, whether destroyed or intact, would additionally hinder the advance. Soviet forces, by virtue of these factors will most likely be blocked in many areas and will be severely canalized in their advance. The Europeans realize this and have taken tremendous steps in creating preplanned barriers to be executed on order as the situation arises, so as to block the advancing forces and make them extremely vulnerable to tactical nuclear strikes.

A third point of consideration in which the Soviets seem to place little stock are the actual NATO forces that they will encounter. Outnumbered as they are, they still pose a formidable threat to the advance of the Soviets and, from my readings at least, NATO forces are rarely given the credit by the Soviets that they deserve in this respect. Technologically, Western conventional weapon systems are, in general, superior to those of the Soviets, specifically in regards to the armored forces. Additionally, the advent of more accurate and devastating tactical nuclear weapon systems within NATO are also factors to be taken into consideration. Merely because they are outnumbered does not mean that they will meekly fold in front of a Soviet advance, as the Soviets seem to believe. The odds will quite possibly cause them to fight with that much more determination and perseverance.

Military power notwithstanding, however, I believe one of the largest factors to be taken into account will be that of the Western European's defense of their own homeland and

their will to survive. They have faced the threat of Communism since the end of World War I and considering the consequences were they to be overrun by the Soviets, I find it illogical to think that they would give up their freedom and everything they have thus gained in the free world without a fight utilizing every resource, quite probably to the last man. As an example, the West German Bundeswehr in their war plans call for their troops to only defend back to a given line at which time they will, quite simply, fight to the death.

On the part of the Soviet armed forces, we have discussed their strengths and weaknesses in some detail in the preceding chapters. While there are definite attributes to their doctrine such as their unit organization, vast amounts of troops and vehicles, and so on, there are also some areas which I would think would be of considerable concern during a rapidly paced future war. These particular areas are the extreme centralization of their command structure and their severe stifling of initiative on the part of the officers and leaders, as were discussed in chapter four. Additionally, the training given to the individual soldier, while stressing repetition and rote response to a given situation, also severely restricts his ability to react to the rapidly changing, chaotic conditions inherent to combat operations. These deficiencies appear to me to be of significant magnitude to seriously threaten the integrity of Soviet military doctrine, specifically in light of its emphasis on the dominant role of the tank in modern warfare. As stated earlier, it is necessary to understand that a large amount of sophisticated

military hardware is only as effective as those crewmembers who man it.

Soviet armored doctrine as we understand it in relation to the overall scope of their military offense is an effective and viable concept and in the foreseeable future will probably continue as it is with only technological changes readily apparent. Although it is not without its weaknesses, it is definitely something that bears continuing examination and study in order to perhaps more adequately prepare for and defend against it. We have seen that there is much more to their armored doctrine than merely numbers of men and machines. The finite measuring of quantity is one-dimensional and omits consideration of the intangible variables such as quality, initiative, experience, doctrine, freedom of action and, not the least important, leadership. In these attributes I feel the West is perhaps more qualified than are the Soviets, however the quantitative balance is in favor of the East, and if our way of life means anything to us, we must make the necessary effort to preserve it.



## APPENDIX A

### ORGANIZATIONAL CHARTS AND DIAGRAMS

#### Figure

1. Illustrative Front
2. Illustrative Combined Arms Army
3. Illustrative Tank Army
4. Tank Division
5. Tank Regiment
6. Tank Battalion
7. Tank Company (Tank Division)
8. Tank Company (Motorized Rifle Division)
9. Key Equipment, Tank Division
10. Key Equipment, Tank Regiment
11. Key Equipment, Tank Battalion
12. Tactical Diagram
13. The Military Oath

SOURCE: The Defense Intelligence Agency, The Handbook on Soviet Armed Forces, DDB-2680-40-78, (n.p., n.pub., 1978), p. 8-6.

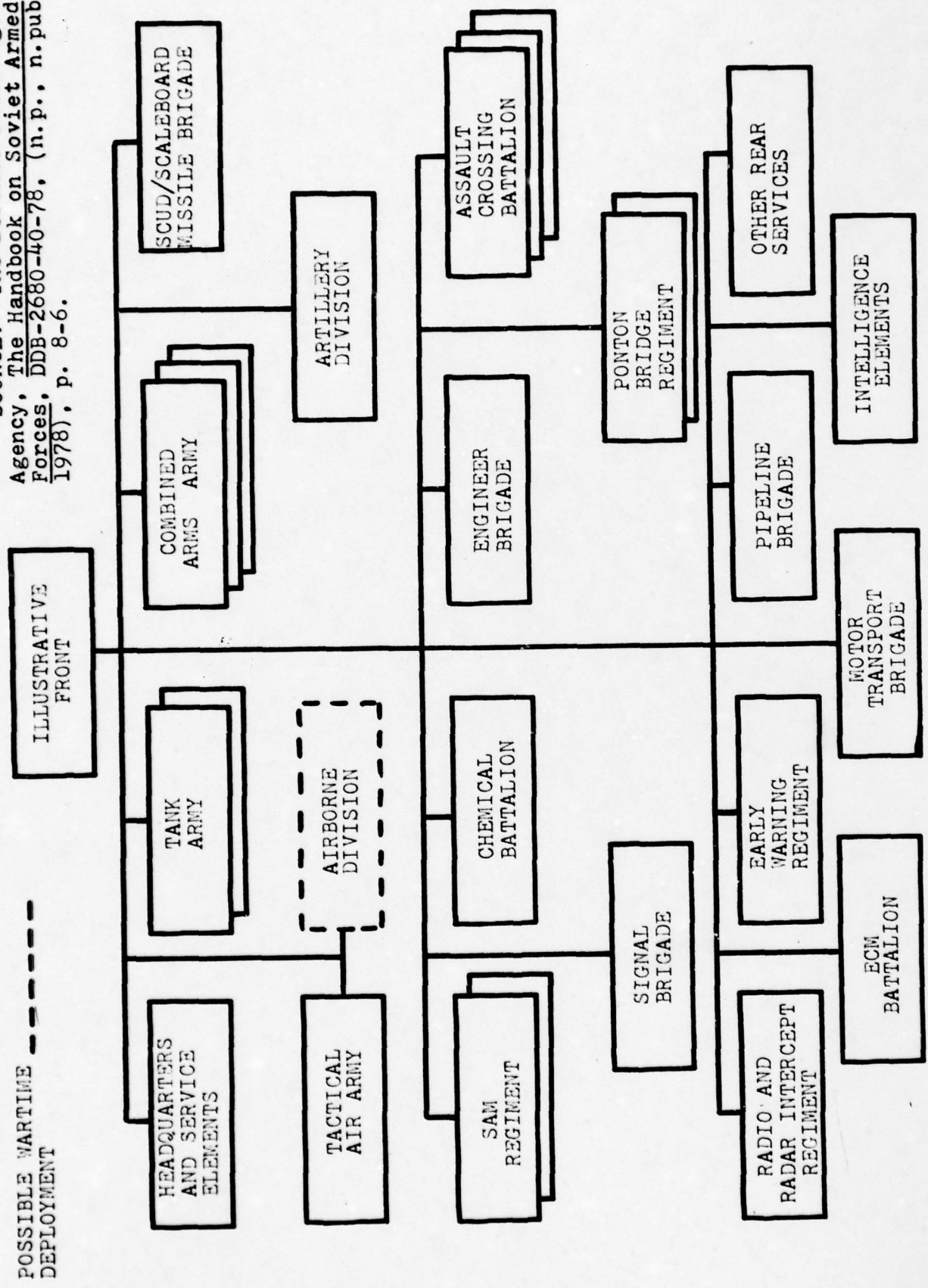
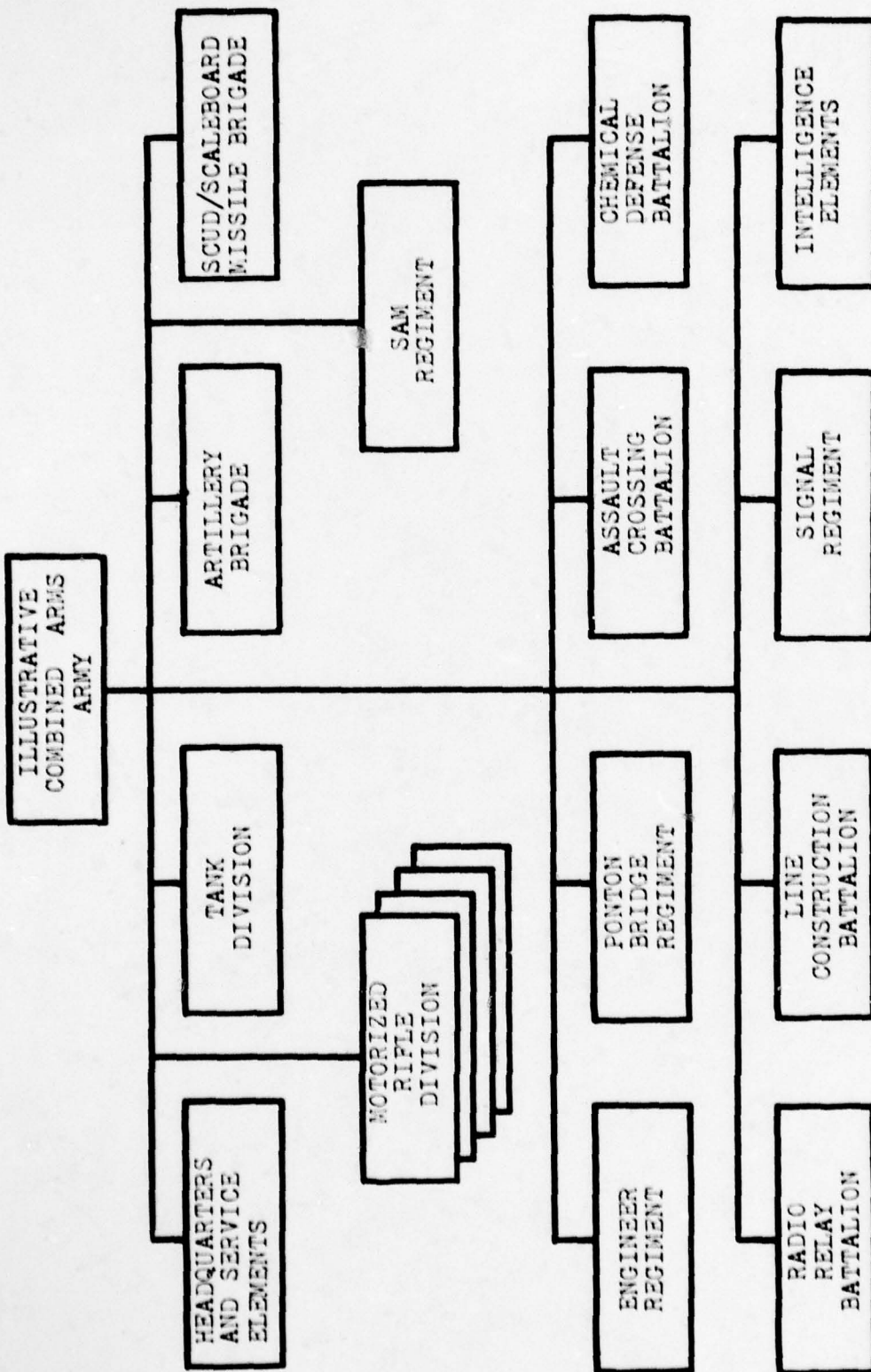


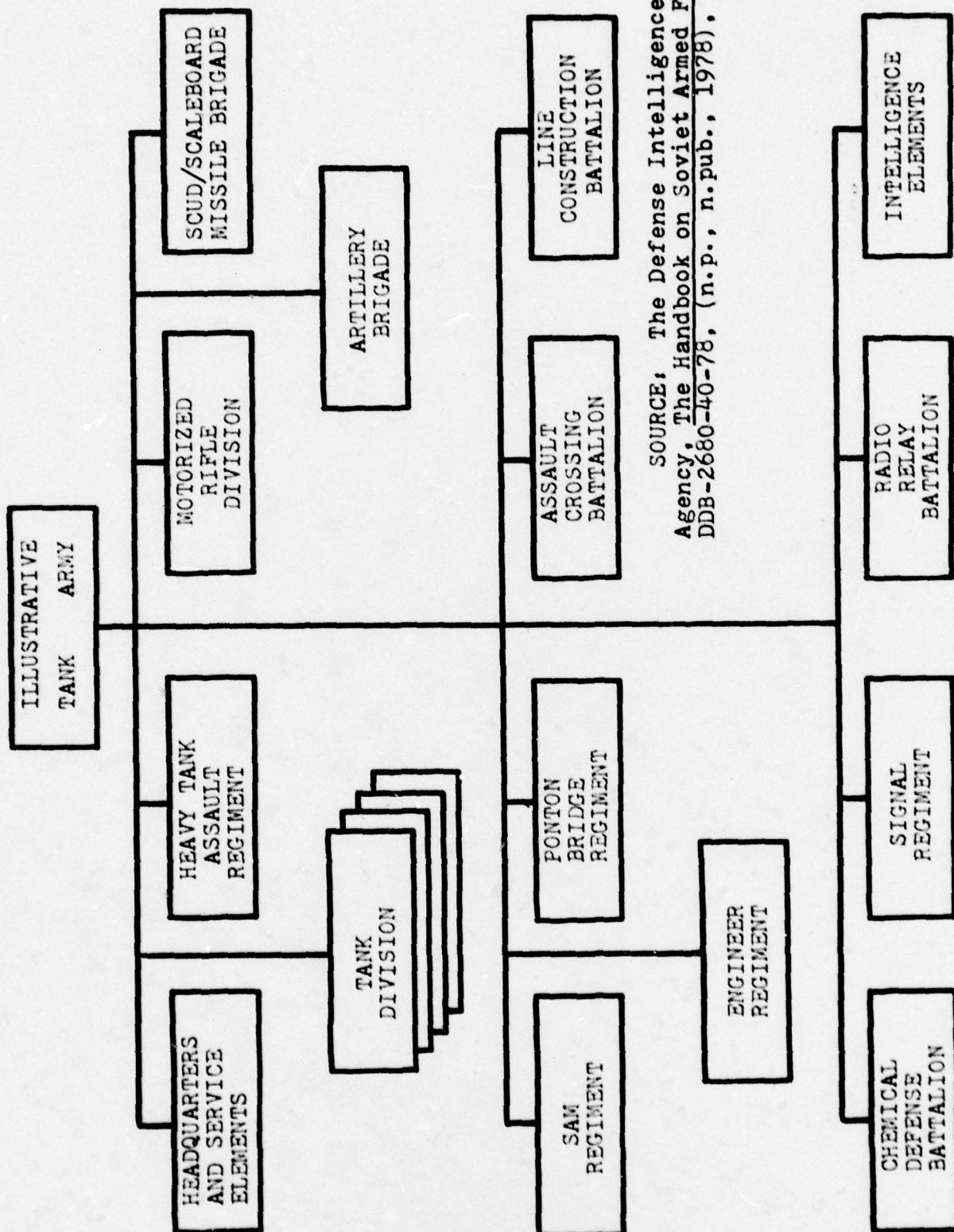
Fig. 1.



SOURCE: The Defense Intelligence Agency, The Handbook on Soviet Armed Forces, DDB-2680-40-78, (n.p., n.pub., 1978), p. 8-7.

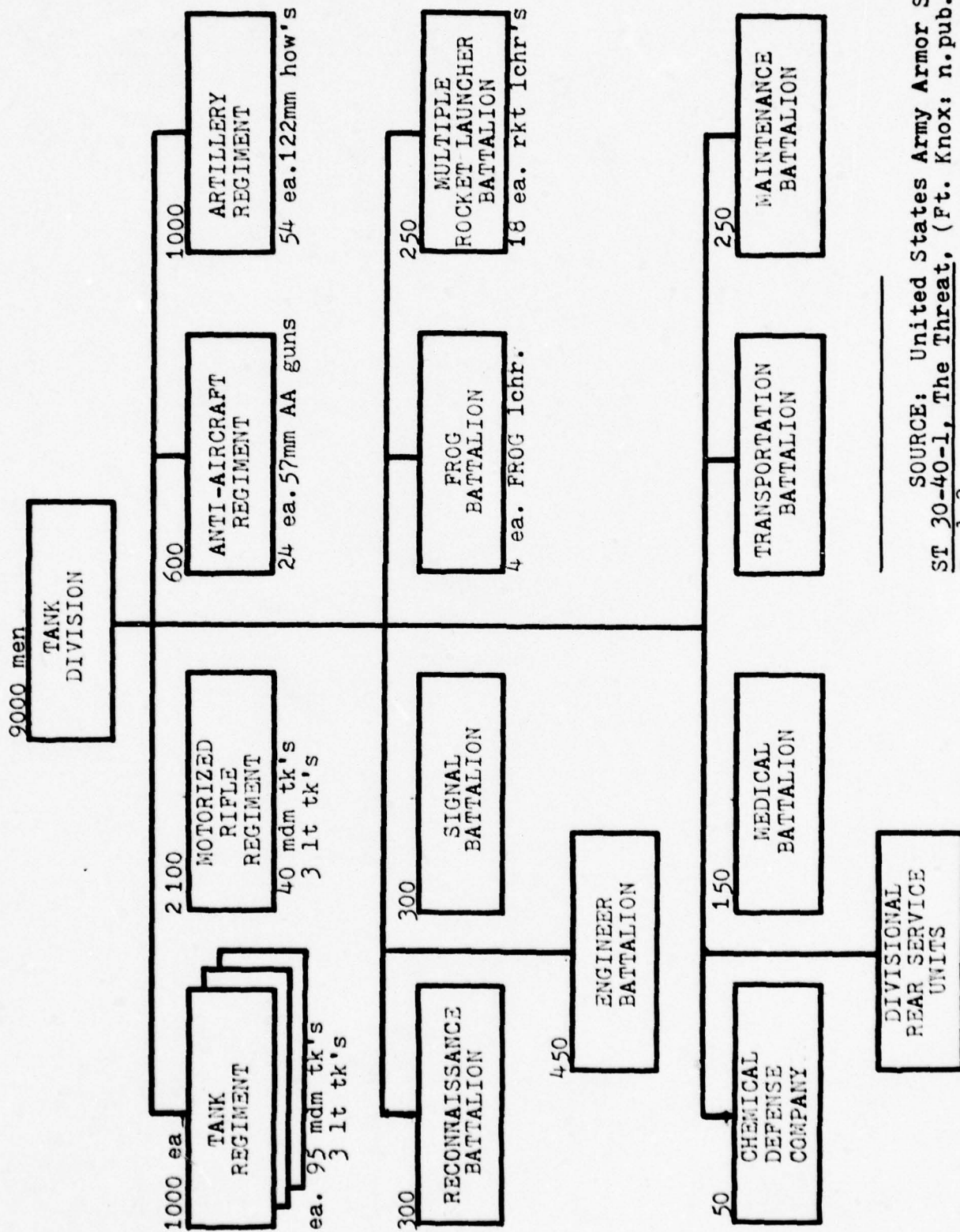
Fig. 2.



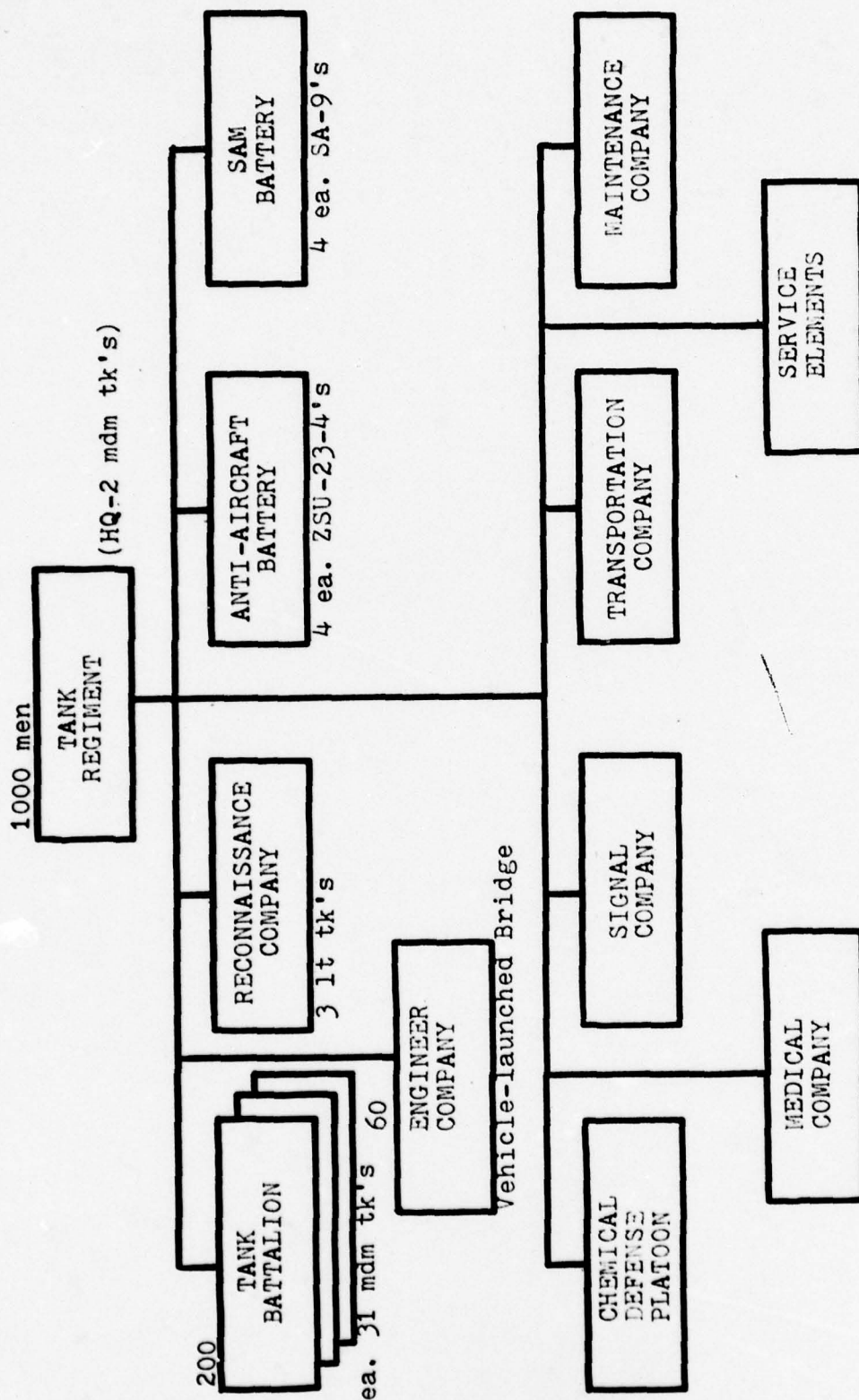


SOURCE: The Defense Intelligence Agency, The Handbook on Soviet Armed Forces, DDB-2680-40-78, (n.p., n.pub., 1978), p. 8-8.

Fig. 3.



146  
 SOURCE: United States Army Armor School,  
 ST 30-40-1, The Threat, (Pt. Knox: n.pub., 1975),  
 p. 1-3  
 Fig. 4.



SOURCE: United States Army Armor School, ST 30-40-1, The Threat, (Ft. Knox: n.pub., 1975), p. 1-5.

Fig. 5.



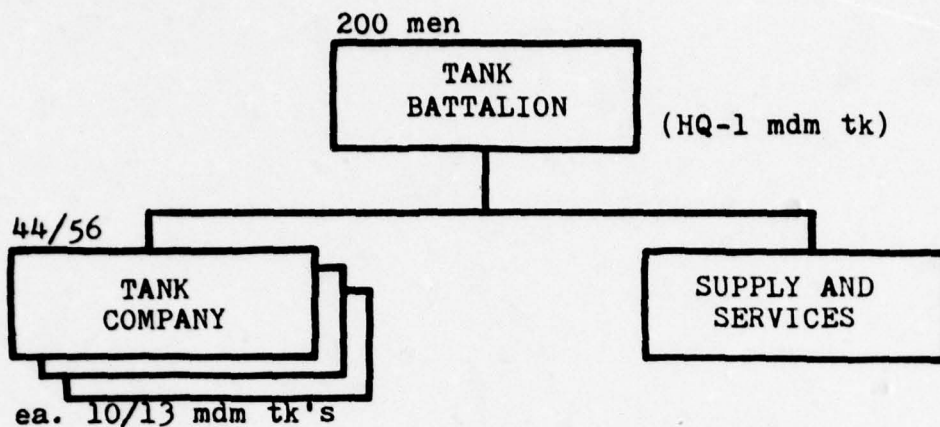


Fig. 6. Tank Battalion

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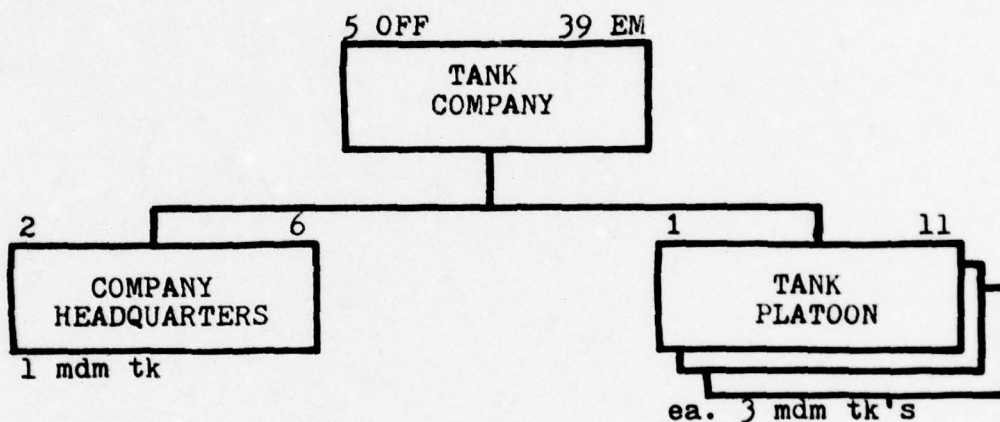


Fig. 7. Tank Company, Tank Division

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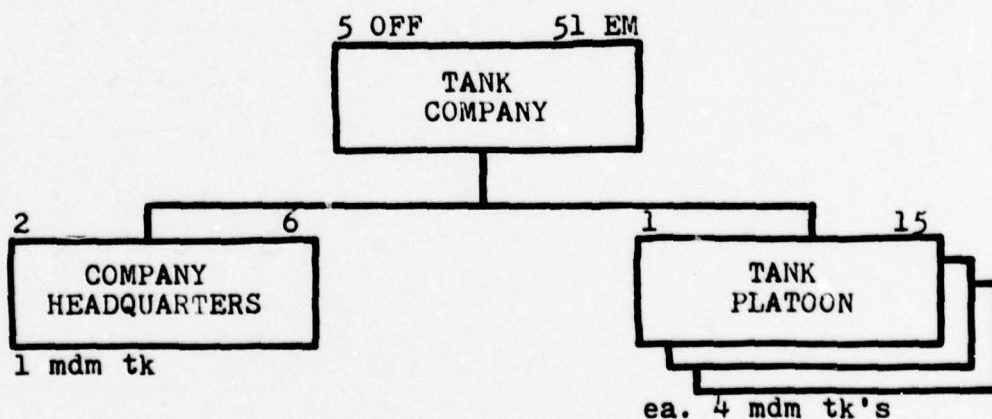


Fig. 8. Tank Company, Motorized Rifle Division

Fig. 9. Key Equipment, Tank Division

Armored Vehicles

325 medium tanks  
 19 light amphibious tanks  
 (Approx) 200 APC's and BRDM's  
 (Approx) 73 BRDM's

Anti-Tank

AT guided missiles (in  
 motorized rifle regiment)

Artillery

60 122mm howitzers  
 18 multiple rocket launchers  
 4 FROG launchers

Anti-Aircraft

24 57mm S-60 AA guns  
 18 57mm ZSU-57-2 SP AA  
     vehicles  
 16 23mm ZSU-23-4 SP AA  
     vehicles  
 16 SA-9's

Fig. 10. Key Equipment, Tank Regiment

95 medium tanks  
 3 light amphibious tanks  
 20 APC's and BRDM's  
 4 ZSU-23-4 SP AA vehicles  
 4 SA-9's  
 Vehicle-launched bridge (MTU and TMM)

Fig. 11. Key Equipment, Tank Battalion

31/40 medium tanks  
 3 APC's or BRDM's

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SOURCE: U. S. Army Armor School, The Threat, ST 30-40-1.  
 (Ft. Knox, Kentucky, 1975), pp. 1-3, 1-5, 1-6.

Fig. 12. Tactical Diagram

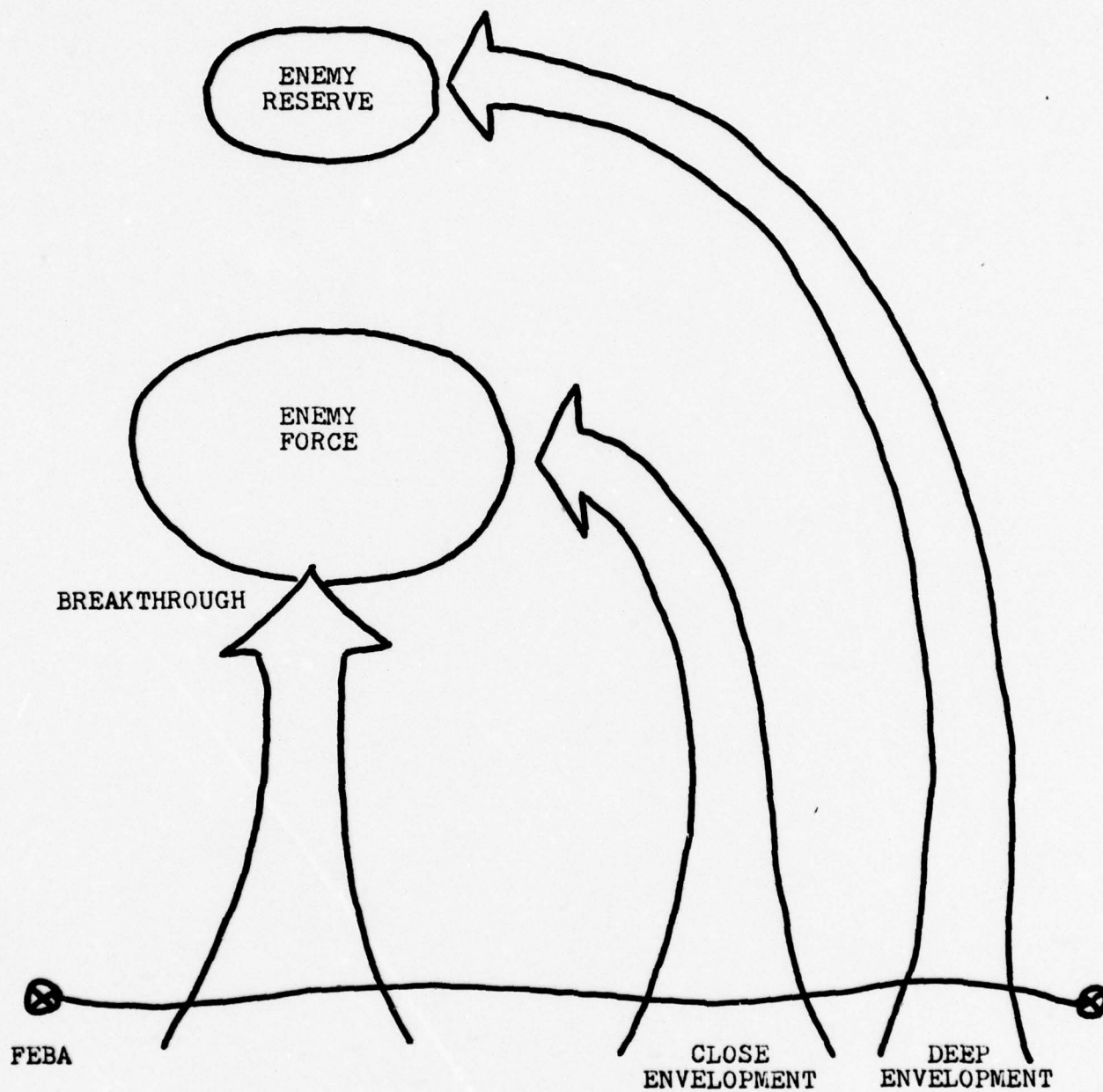




Fig. 13

## THE MILITARY OATH

I (name), a citizen of the Union of Soviet Socialist Republics, by joining the ranks of the armed forces, take an oath and solemnly swear to be an upright, brave, disciplined, vigilant soldier, to strictly (sic) preserve military and government secrets, and to execute without contradiction, all military regulations and orders of commanders and superiors. I swear to learn conscientiously the trade of war, to protect with all means the military and peoples' property, and to be devoted to my people, my Soviet homeland, and the Soviet Government to my last breath. I will always be ready to report, by order of the Soviet Government, as a soldier of the armed forces for the defense of my homeland, the Union of Soviet Socialist Republics. I swear to defend it bravely and wisely with all my strength and in honor, without regard for my life to achieve a complete victory over the enemy. Should I break my solemn oath, may severe penalties of the Soviet Law, the overall hatred, and the contempt of the working masses strike me.

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SOURCE: The Defense Intelligence Agency, The Handbook on Soviet Armed Forces, DDB-2680-40-78 (n.p., n.pub., 1978), pp. 5-3 to 5-6.

## APPENDIX B

### SOVIET ARMORED VEHICLES

#### Figure

1. Vezdekhod
2. Russian Renault
3. MS-I/T-18
4. T-26C Light Tank
5. T-26B with Radio Aerial
6. BT-5 Light Tank (Wheel Configuration)
7. BT-7 Light Tank (Track Configuration)
8. T-35B Heavy Tank
9. T-35 Heavy Tank
10. T-28 Heavy Tank
11. T-34/76 Medium Tank (76mm Gun)
12. T-34/76 Medium Tank
13. T-34/85 Medium Tank (85mm Gun)
14. T-34/85 Medium Tank
15. T-34 Medium Tank (Rear View of Sloping Armor)
16. T-40 Light Tank
17. KV-1 Heavy Tank (76mm Gun)
18. KV-85 Heavy Tank (85mm Gun)
19. JS-I Heavy Tank (122mm Gun)
20. JS-III Heavy Tank (122mm Gun)
21. T-54 Medium Tank (100mm Gun)

**Figure**

- 22. T-55 Medium Tank (100mm Gun)
- 23. T-62 Medium Tank (115mm Gun)
- 24. T-62 Medium Tank (Side View)
- 25. PT-76 Reconnaissance Tank
- 26. PT-76 Vehicles in Water Operation
- 27. T-72 Main Battle Tank (115mm Gun)
- 28. T-72 Main Battle Tank (Side View)



# Vezdekhod

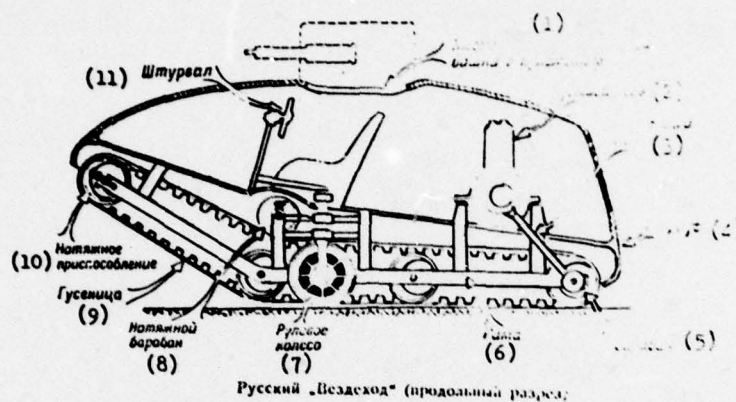
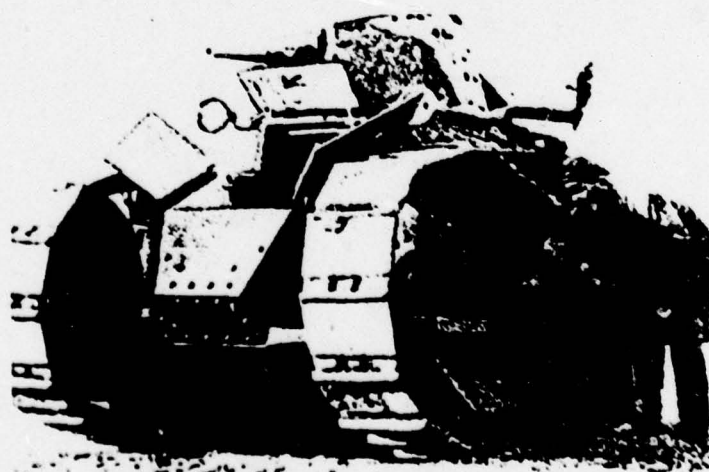
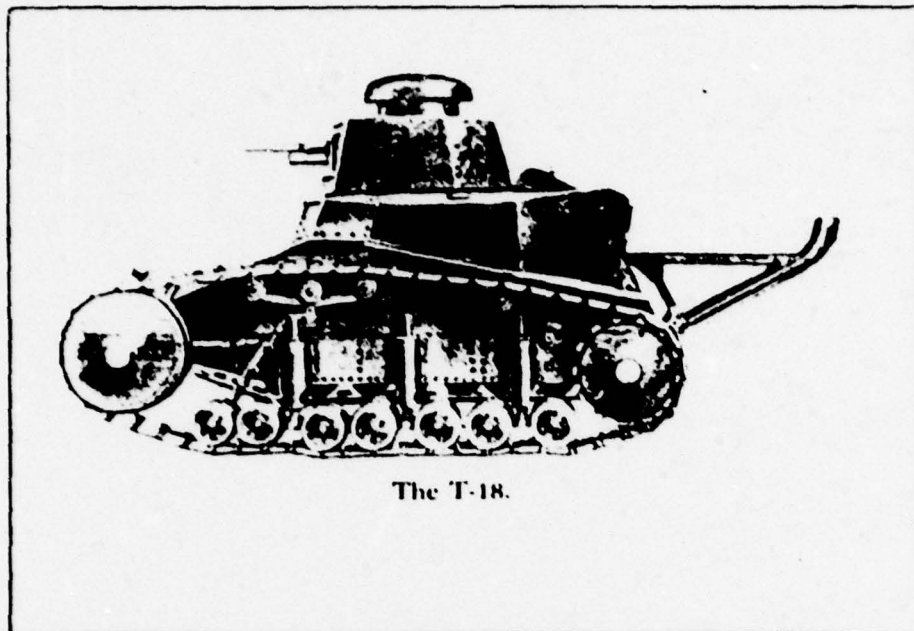


Fig. 1. Vezdekhod



The Russkii Reno.

Fig. 2. Russian Renault



The T-18.

Fig. 3. MS-I/T-18

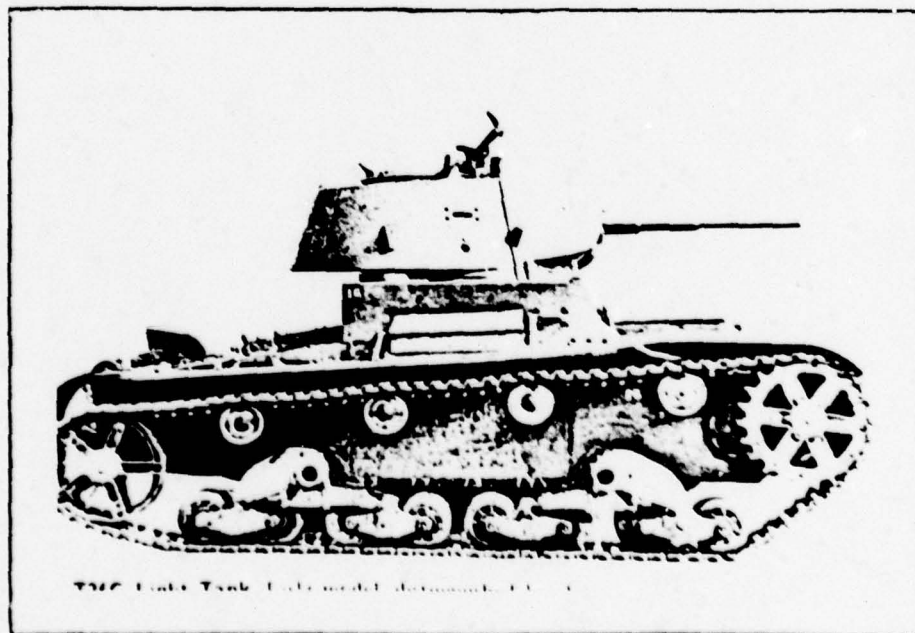


Fig. 4. T-26C Light Tank

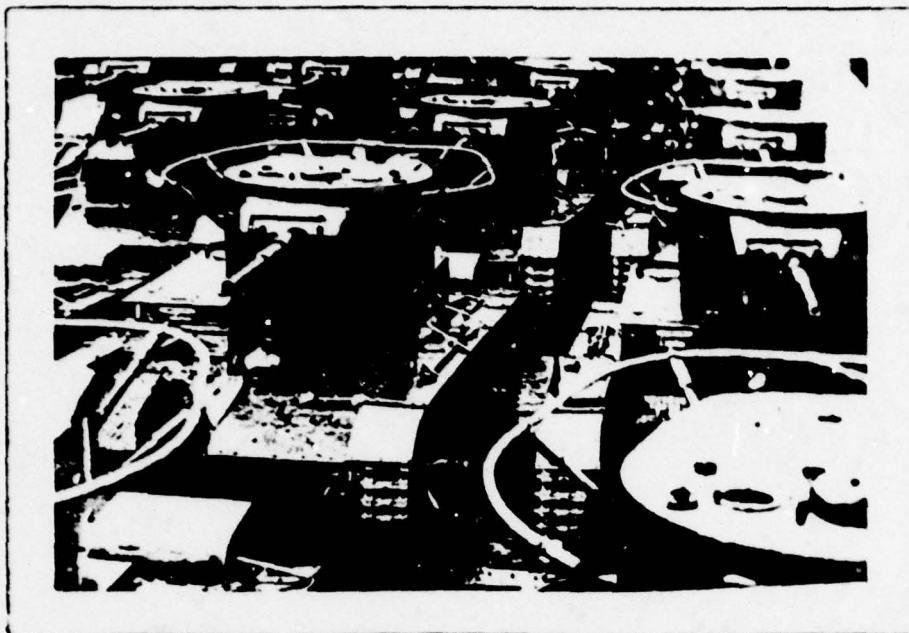
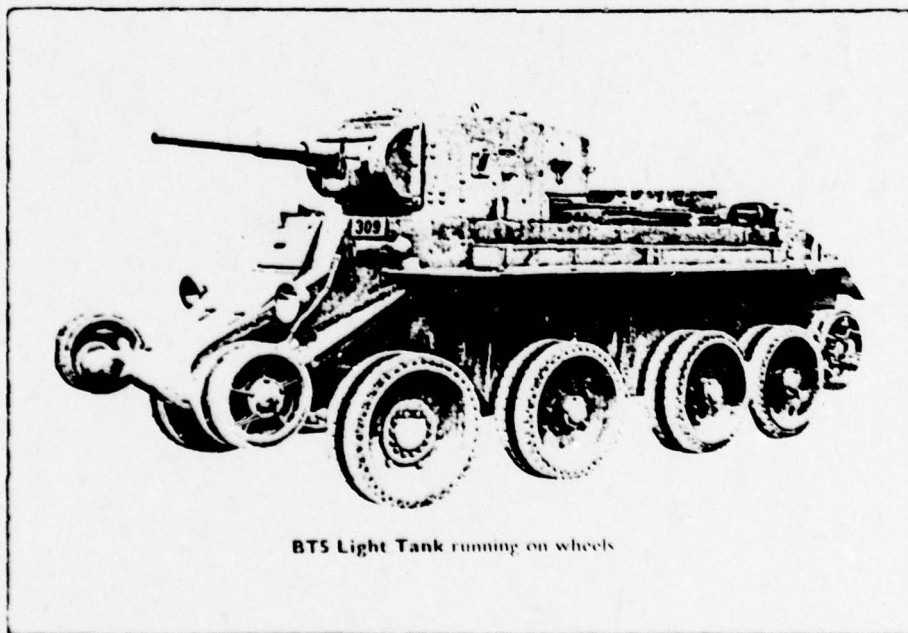


Fig. 5. T-26B with Radio Aerial



BT5 Light Tank running on wheels

Fig. 6. BT-5 Light Tank (Wheel Configuration)



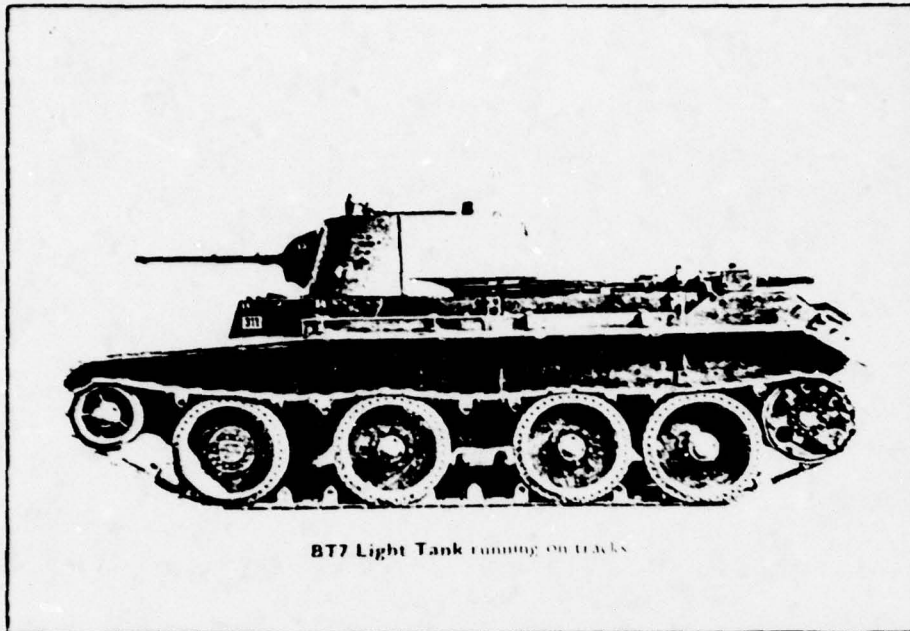


Fig. 7. BT-7 Light Tank (Track Configuration)

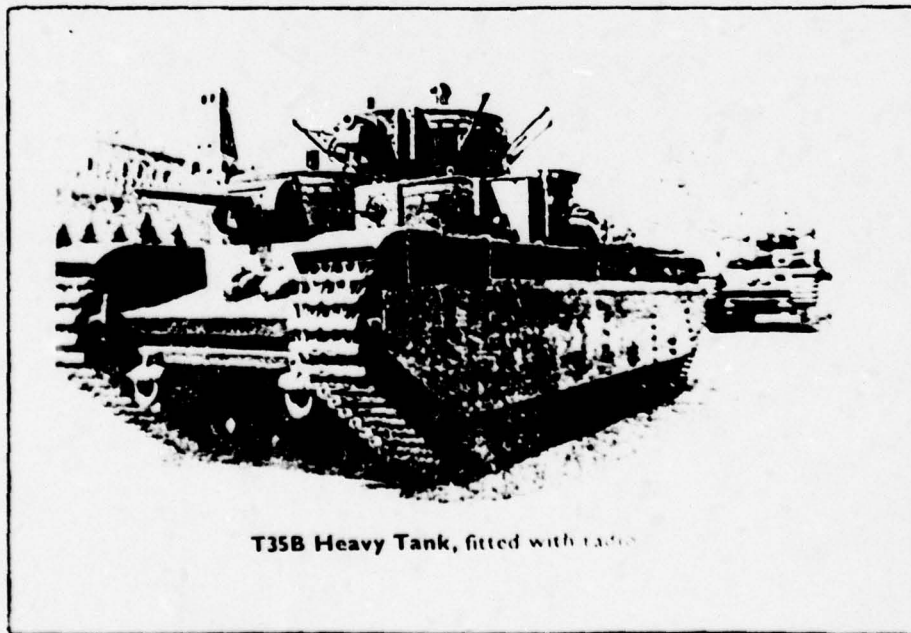


Fig. 8. T-35B Heavy Tank

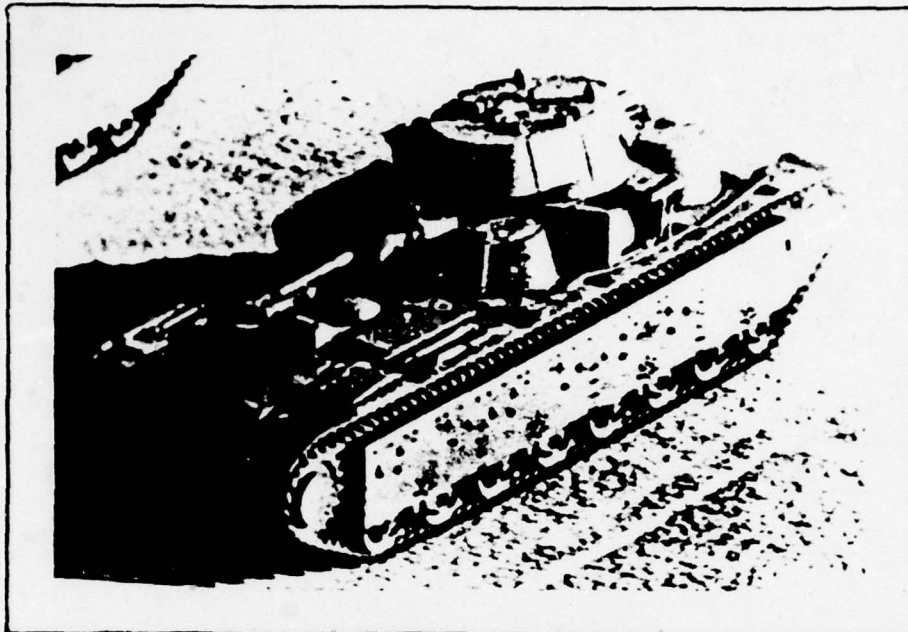
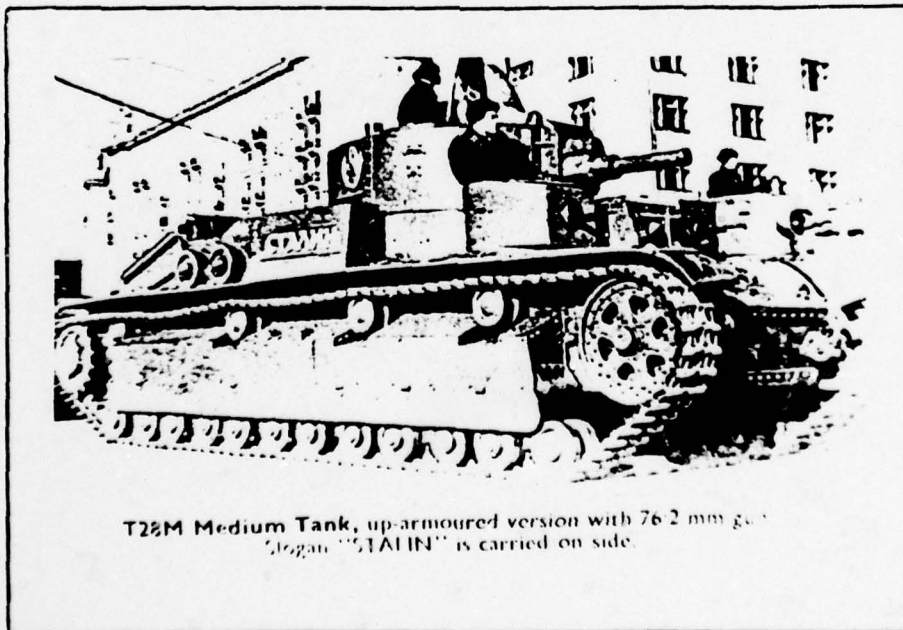


Fig. 9. T-35 Heavy Tank



T28M Medium Tank, up-armoured version with 76.2 mm gun  
Logan "STALIN" is carried on side

Fig. 10. T-28 Heavy Tank



Fig. 11. T-34/76 Medium Tank (76mm Gun)

Soviet T-34/76 A

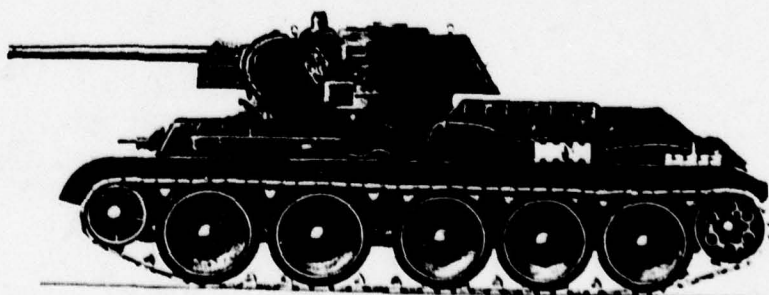


Fig. 12. T-34/76 Medium Tank



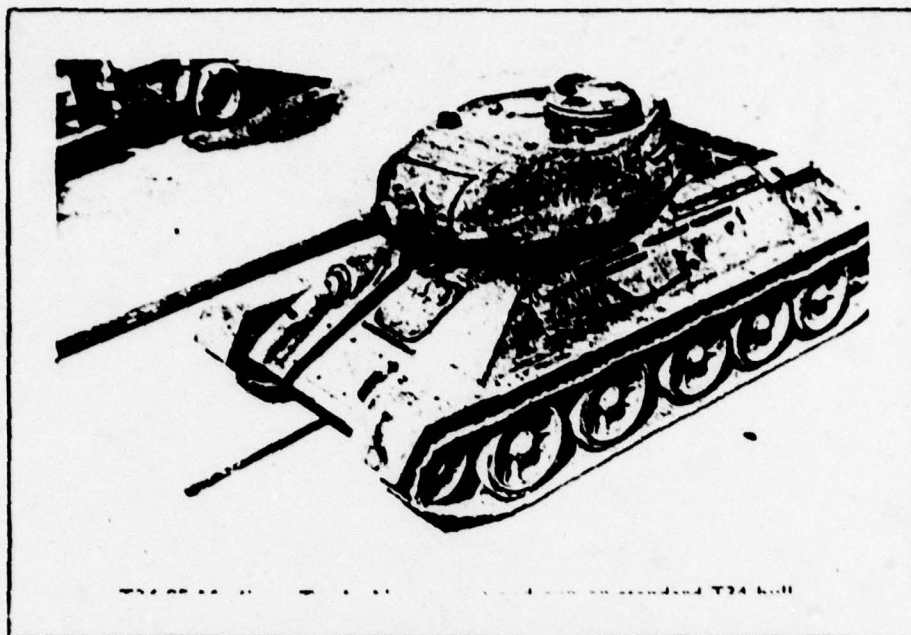


Fig. 13. T-34/85 Medium Tank (85mm Gun)

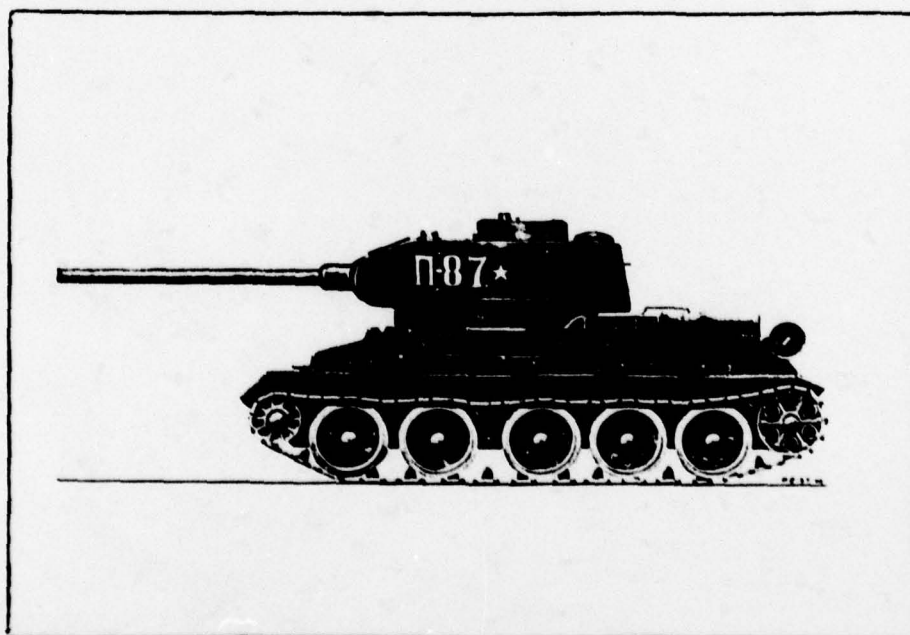


Fig. 14. T-34/85 Medium Tank

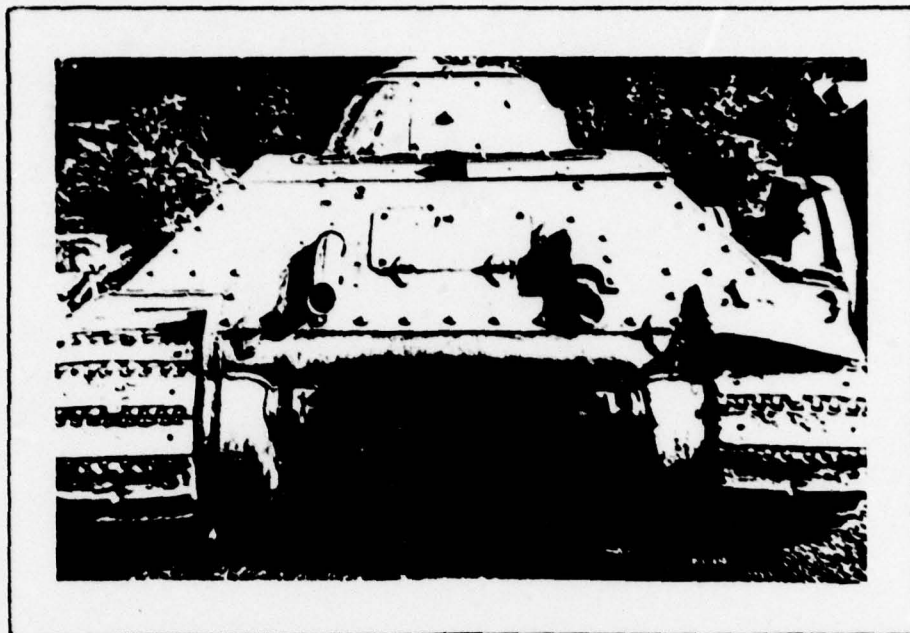


Fig. 15. T-34 Medium Tank (Rear View of Sloping Armor)

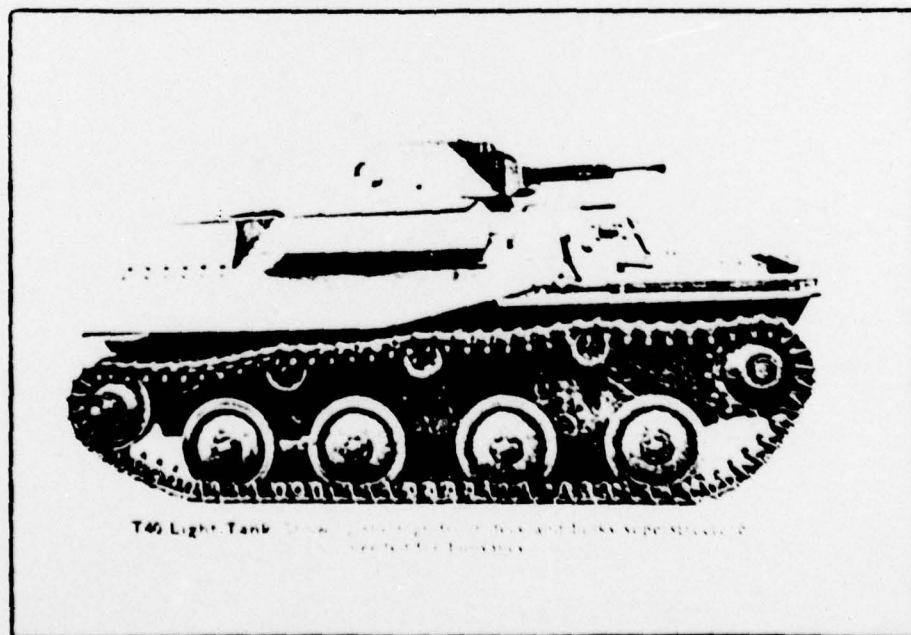


Fig. 16. T-40 Light Tank



Fig. 17. KV-1 Heavy Tank (76mm Gun)

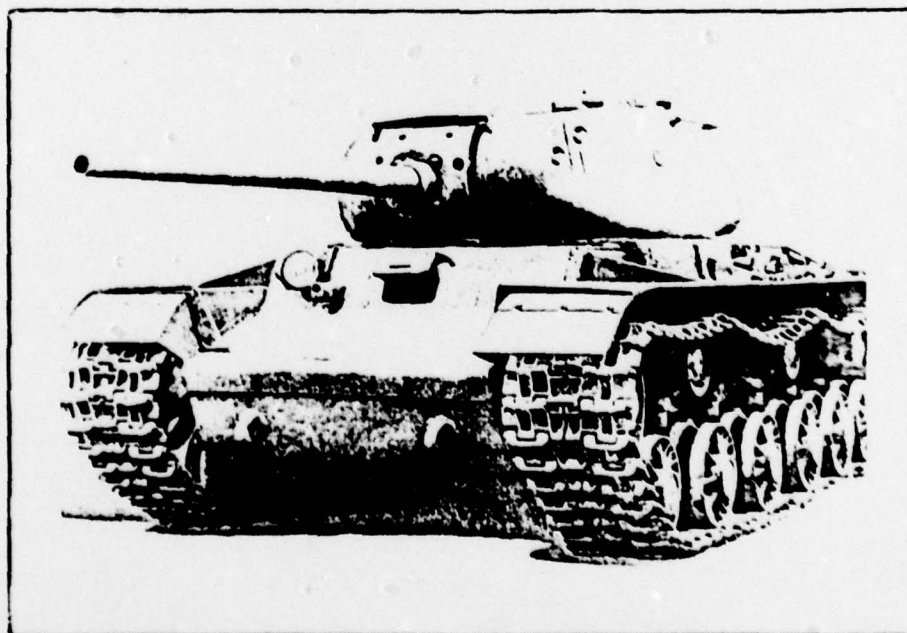


Fig. 18. KV-85 Heavy Tank (85mm Gun)





Fig. 19. JS-I Heavy Tank (122mm Gun)

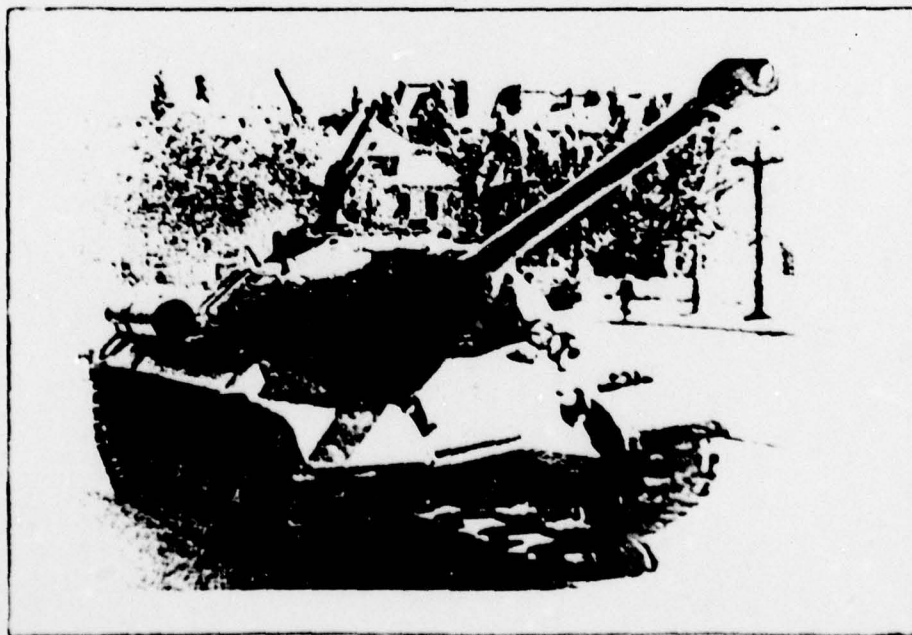


Fig. 20. JS-III Heavy Tank (122mm Gun)



Fig. 21. T-54 Medium Tank (100mm Gun)

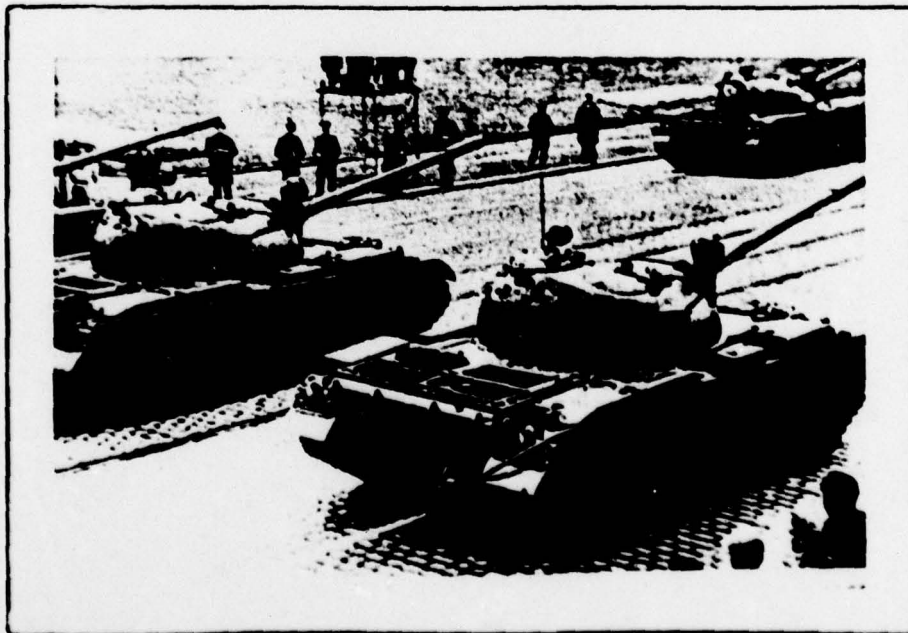


Fig. 22. T-55 Medium Tank (100mm Gun)



Fig. 23. T-62 Medium Tank (115mm Gun)

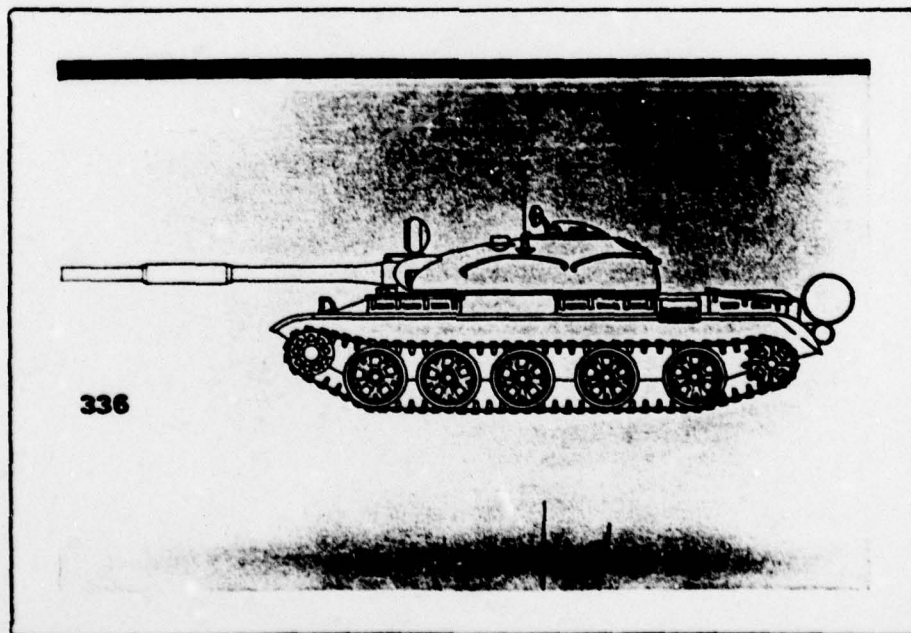


Fig. 24. T-62 Medium Tank (Side View)



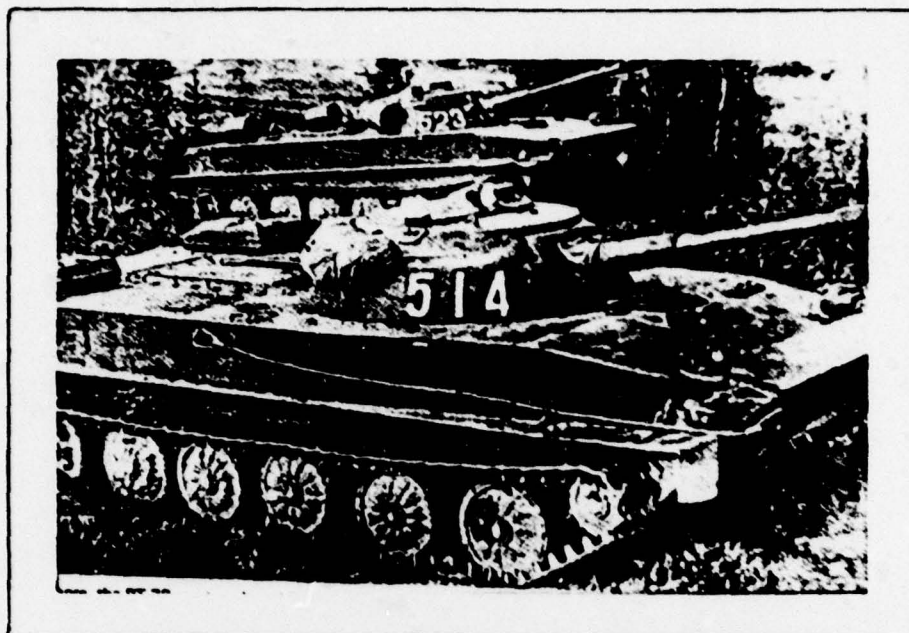


Fig. 25. PT-76 Reconnaissance Tank

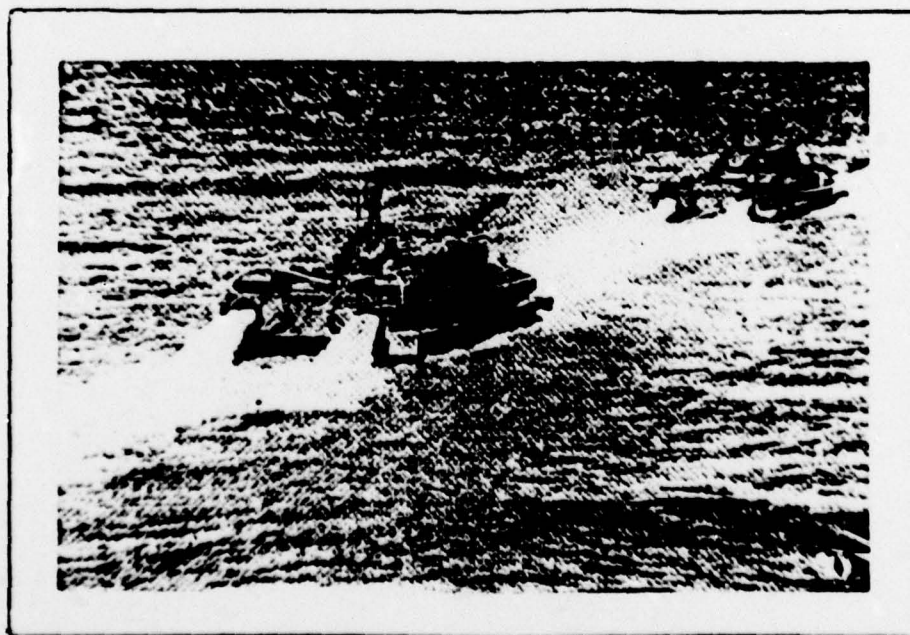


Fig. 26. PT-76 Vehicles in Water Operation

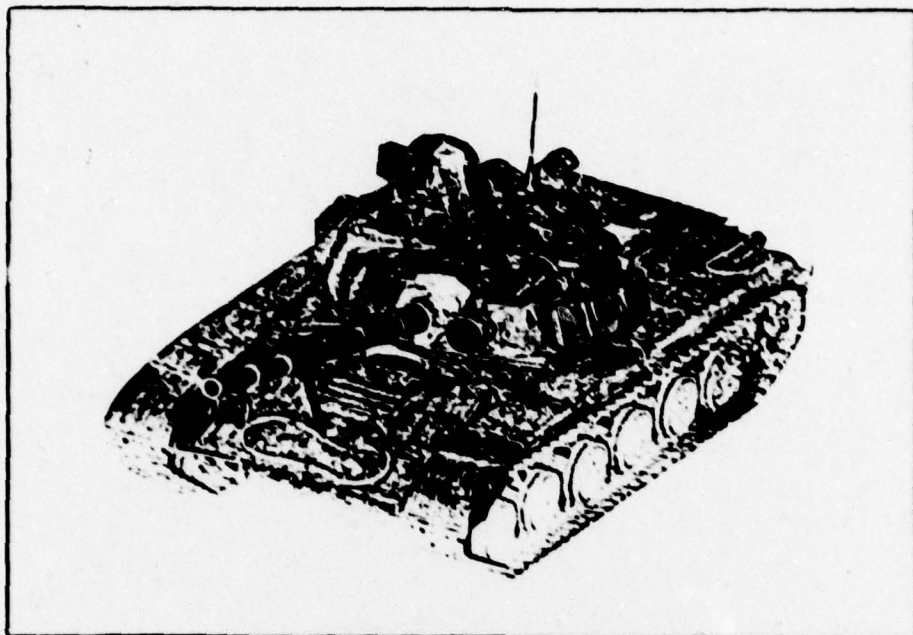


Fig. 27. T-72 Main Battle Tank (115mm Gun)

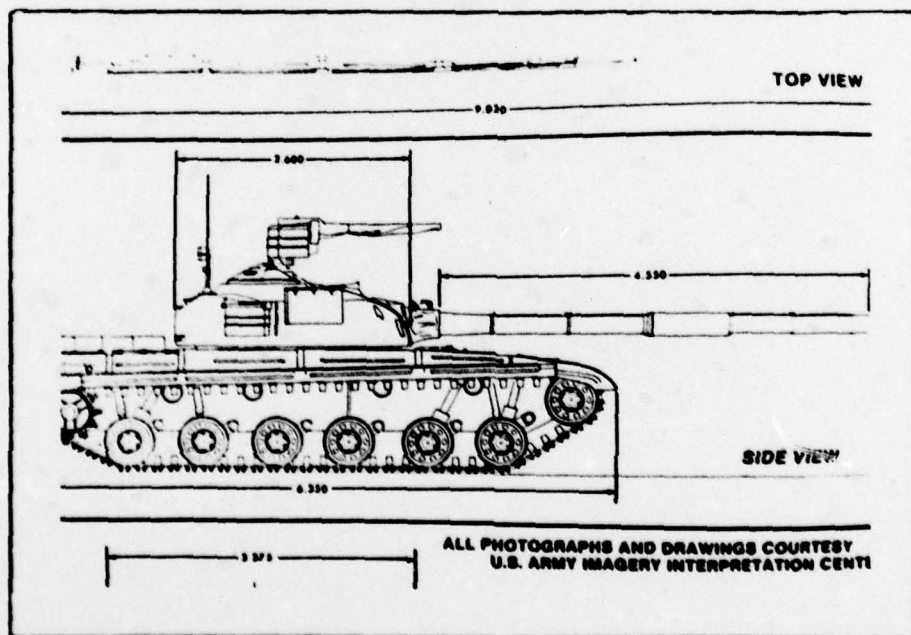


Fig. 28. T-72 Main Battle Tank (Side View)

Sources for Appendix B

## Figure

1. SOURCE: John M. Brereton and Uwe Feist, Russian Tanks, 1915-1968 (Berkeley: Feist Publications, 1970), p. 10; as reproduced from The Tank by A. S. Antonov et al., Moscow, 1954.
2. SOURCE: Brereton, Russian Tanks, p. 11.
3. SOURCE: Brereton, Russian Tanks, p. 11.
4. SOURCE: The Royal Armoured Corps Tank Museum, Bovington Camp, England, Tanks of Other Nations: USSR (Dorset: Dorset Press, 1970), p. 44.
5. SOURCE: Royal Tank Museum, USSR, p. 43.
6. SOURCE: Royal Tank Museum, USSR, p. 46.
7. SOURCE: Royal Tank Museum, USSR, p. 46.
8. SOURCE: Royal Tank Museum, USSR, p. 48.
9. SOURCE: Brereton, Russian Tanks, p. 18.
10. SOURCE: Royal Tank Museum, USSR, p. 47.
11. SOURCE: Royal Tank Museum, USSR, p. 51.
12. SOURCE: Brereton, Russian Tanks, p. 53.
13. SOURCE: Royal Tank Museum, USSR, p. 51.
14. SOURCE: Brereton, Russian Tanks, p. 56.
15. SOURCE: Brereton, Russian Tanks, p. 35.
16. SOURCE: Royal Tank Museum, USSR, p. 49.
17. SOURCE: Royal Tank Museum, USSR, p. 52.
18. SOURCE: Royal Tank Museum, USSR, p. 53.
19. SOURCE: Royal Tank Museum, USSR, p. 54.
20. SOURCE: Royal Tank Museum, USSR, P. 54.
21. SOURCE: Brereton, Russian Tanks, p. 68.
22. SOURCE: Brereton, Russian Tanks, p. 76.
23. SOURCE: Royal Tank Museum, USSR, p. 56.



## Figure

24. SOURCE: John H. Batchelor and Kenneth Macksey, Tank (New York: Ballantine Books, Inc., 1973), p. 155.
25. SOURCE: Brereton, Russian Tanks, p. 64.
26. SOURCE: Brereton, Russian Tanks, p. 65.
27. SOURCE: "T-72", Armor, Vol. LXXXVII No. 1, January-February, 1978, p. 35.; as reproduced from photographs and drawings of the U. S. Army Imagery Interpretation Center.
28. SOURCE: "T-72", Armor, p. 36.

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